

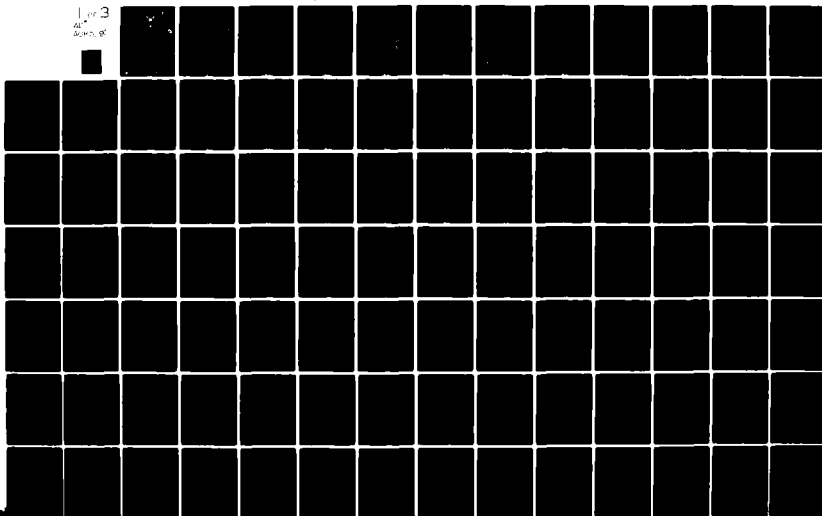
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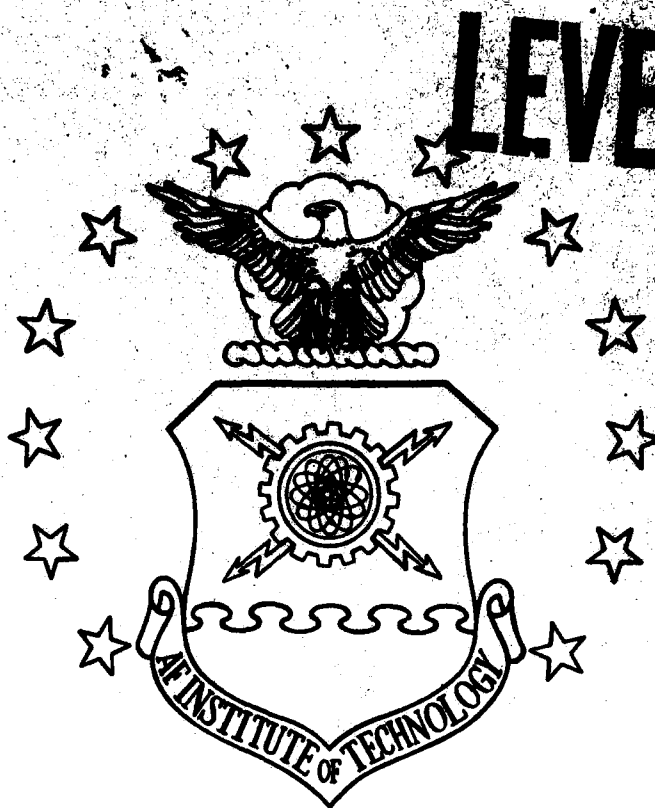
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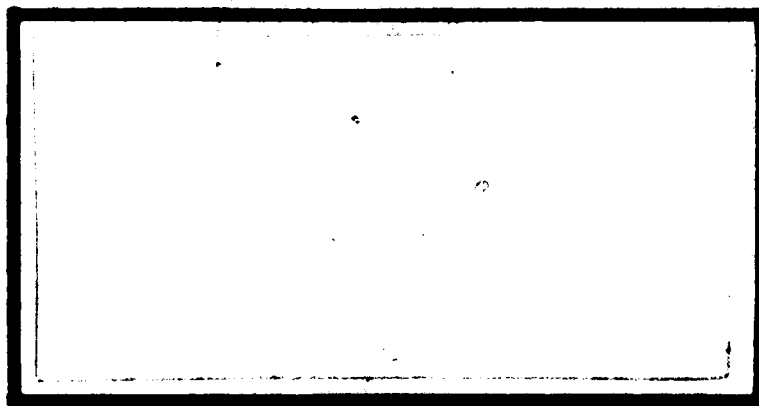
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ANALYSIS OF MINUTEMAN MISSILE CREW
MEMBER ATTITUDES TOWARD PRESENT
MINUTEMAN EDUCATION PROGRAM AND
POSSIBLE ALTERNATIVES

Donald L. Kemp, Captain, USAF
Andrew T. Rybacki, Captain, USAF

LSSR 25-80

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Since the introduction of the Minuteman Missile into the arsenal numerous authors have identified problem areas that have hindered the operational effectiveness and morale. Crew member attitudes and the Minuteman Education Program (MMEP) have been the basis for many of these studies, the latest survey was conducted in 1978. The purpose of this study was to determine: (1) the current attitudes of the Minuteman Combat Crew Members (MCCMs); (2) compare the current attitudes with the results of previous studies to determine if a significant difference occurred during the last four years; and (3) determine if they would be willing to accept modifications in the current MMEP in the form of alternate curriculum, course presentations, or graduate degree programs. The authors concluded that: (1) the MCCMs' attitudes have not improved towards their job, their career field, or the MMEP since 1976; (2) the MCCMs would be willing to accept modifications in the MMEP in the form of alternate curriculum and alternate graduate degree programs; but (3) they are not willing to modify the presentation methods, for one of those suggested, or change the present curriculum, for one that better meets the needs of the Air Force.

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ANALYSIS OF MINUTEMAN MISSILE CREW MEMBER ATTITUDES TOWARD
PRESENT MINUTEMAN EDUCATION PROGRAM AND POSSIBLE ALTERNATIVES

A Thesis

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the Requirements for the
Degree of Master of Science in Logistics Management

By

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June 1980

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This thesis, written by

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MASTER OF SCIENCE IN LOGISTICS MANAGEMENT

DATE: 9 June 1980

Michael B. McCormick

COMMITTEE CHAIRMAN

ACKNOWLEDGEMENTS

We wish to express our sincere appreciation to those individuals who have contributed their suggestions, cooperation, and support to this effort. Their contributions have made this document possible.

Special thanks are extended to our thesis advisor, Lieutenant Colonel Mike McCormick, who has guided us in this effort and allowed us to explore the areas we have addressed here; Lieutenant Colonel Ron Bache and the AFIT Detachment Commanders for their time and efforts in administering the survey.

Finally, we owe a great debt of gratitude to the combat crew members who took the time to honestly and promptly answer the questionnaire. We sincerely hope that this effort will benefit them and help make a very difficult job more rewarding.

The contents of the document are technically accurate, and no sensitive items, detrimental ideas, or deliterious information are contained therein. Furthermore, the views expressed in the document are those of the authors and do not necessarily reflect the views of the School of Systems and Logistics, the Air University, the United States Air Force, or the Department of Defense.

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CHAPTER I

INTRODUCTION

Background

The minuteman of our colonial period was ready at a moment's notice to take up arms in defense of his home. This historical precedent has carried over to the age of nuclear stalemate. The United States must keep a constant vigilance against overt acts of nuclear aggression. This vigilance is the responsibility of the Minuteman Intercontinental Ballistic Missile (ICBM) crew force.

The individuals assigned to the crew force are the human elements in a system where computers perform constant communication with each other. The crew member's alert duty consists of checking the operation of his equipment, normally a task which takes a half hour, the adjustment of his zulu clock, and coordination of maintenance at remote launcher silos. Since the inception of the new positive control seal system, the capsule can be monitored by one crew member while the other sleeps. All these factors have contributed to the low intrinsic satisfaction and low inherent value of crew duty; and provided the impetus for considerable research on crew motivation.

The basic question throughout the previous research efforts has been whether the responsibilities of crew duty have been sufficient to motivate officers to volunteer for missile combat crew duty.

Numerous recommendations have been made to improve crew duty; however, the majority of these improvements have followed the lines of crew comfort. Previous studies, however, have shown that one program provides a positive incentive for volunteers to the missile career field. This program is the Minuteman Education Program (1:116; 5:105).

The Minuteman Education Program (MMEP) was introduced in the early sixties as an inducement for officers to volunteer for missile duty by providing the crew member with a straight-forward way to get a masters degree. It was designed to relieve the tedium on alert; to help the crew member meet some part of his personal needs for self-fulfillment; and to provide the Air Force with a resource of officers educated beyond the baccalaureate level.

The program is offered at all six of the Minuteman Missile wings and is open to all who can fulfill the requirements of the local institution which administers the program. Although the program is open to all base personnel, missile combat crew members are the only participants who do not pay tuition. There are presently 593 crew members and 223 non-crew members enrolled in the

program which annually costs the Strategic Air Command 2.2 million dollars (2).

The program has been integrated with the SAC mission to enhance the crew members' progress. Thus, the crew members alert schedule and class schedule are integrated, and, with the exception of mission essential requirements, no training or work activities can be scheduled on the days a crew member is to be in class. The workload of the program is designed considering the crew member's obligation to duty; and, the academic offices, instructors and resources are conveniently located to allow ready access to students.

The basic degree offered via the MMEP is a master's degree in business administration. Local colleges and universities provide the educational resources and offer the master's degree as part of their own graduate degree programs. Although SAC is the parent command which funds the Minuteman Education Program, the supervisory responsibility for the entire Minuteman Education Program rests with the Air Force Institute of Technology (AFIT) located at Wright-Patterson Air Force Base, Ohio. To help fulfill this responsibility, AFIT has assigned field representatives to each base.

Traditionally, other programs have competed for crew member participation. However, with recent cutbacks

in Veteran's Administration benefits, some of the alternate programs have shown decreased enrollment (2). Although the crew member has the option of pursuing other programs, for most, it now must be at personal expense and without the benefit of scheduling considerations.

How the crew member perceives himself, his job, and his needs have been important considerations in the past and will continue to be important in the future. In order to attract volunteers of high caliber, the crew member's perceptions must be kept in mind in the design of supportive programs.

Problem Statement

Many programs are being reevaluated in relation to their direct contribution to the modern Air Force. The Minuteman Education Program is no exception. Previous studies such as the theses conducted by Ashbaugh and Godfrey, Cancellieri and Willoughby, and Engel and O'Neill have provided evidence that the MMEP has been an important motivational factor for volunteers to the Minuteman Missile crew duty (1825) and an encouragement for crew members to remain in this Air Force Specialty Code (AFSC). However, the MMEP has contributed to a potentially significant problem. As pointed out in the Progress Report on the 15th AF/DP Study (MMEP) dated 22 Nov. 77, graduates of the MMEP add to an already large overage, above the

requirements validated by the Advanced Academic Degree Management System (AADMS), in the USAF officer inventory of officers with master's degrees in management disciplines (6:3). However, this particular fact must be placed in proper perspective. Certain specific academic disciplines have large overages where others have shortages. According to the projected AADMS requirement by HQ USAF/DPPE, eight disciplines have large current and projected shortages which could be reduced by alternative MMEP curricula. They are: (1) Data Processing, (2) Telecommunications, (3) Special Facilities Management, (4) Engineering Management, (5) Logistics Management, (6) Public Relations, (7) Electronic Engineering, and (8) Criminology (6:4).

Since the inception of the MMEP, the Strategic Air Command has been concerned with the cost, curriculum, and objectives in relation to the program's direct contribution to the Air Force. In today's atmosphere of fiscal austerity, it is increasingly essential that the defense dollar be utilized in the most effective manner. Effectiveness for the MMEP translates into achieving three essential objectives: (1) inducing individuals to volunteer for MCCM duties, (2) fulfilling the individual

crew member's educational needs, and (3) meeting the academic needs of the Air Force. The present program is apparently partially fulfilling the first and second objectives. However, it is questionable as to how well the second objective is being accomplished, since the MMEP had to allow enrollment of noncrew members into the program to remain cost effective. The third objective is definitely not being achieved (6:3).

It is, therefore, prudent to take a close look at the MMEP to see if its effectiveness can be improved. This should be accomplished before any command decisions are made which would radically alter the current program. Since the MMEP was initiated to fulfill the needs of both the crew members and the Air Force, the perceptions and attitudes of the present crew force towards the current MMEP and some alternatives should be sampled and analyzed. That is, in order to insure that the program is contributing to its objectives (i.e., inducing individuals to volunteer for MCCM duties, fulfilling the individual crew members' educational needs, and meeting the academic needs of the Air Force), it is necessary to determine the current attitudes of the crew members towards their job, the missile operations career field, the present MMEP, and alternatives to the present MMEP. If the attitudes are found to be overwhelmingly positive toward the current

MMEP and against any changes which would better meet the academic needs of the Air Force, then any decisions regarding the program would need to be based upon a prioritization of the program's objectives. If however, crew members attitudes towards the present MMEP program is mixed or negative, and their attitudes toward some of the alternative programs are positive or mixed, then the SAC decision makers will have some useful information upon which to base a decision regarding the future of the program.

Objectives

The objectives of this research effort are:

1. To ascertain the current attitudes of the Minuteman combat crew members toward their job, their career field, and the Minuteman Education Program.
2. To compare the current attitudes of the Minuteman combat crew member with the results of previous studies to determine whether a significant difference in attitudes has occurred in the last four years in the areas of their job, their career field, and the MMEP.
3. To determine if the Minuteman combat crew members would be willing to accept modifications in the current MMEP, in the form of alternate curriculums, alternate course presentation methods, or alternate graduate degree programs.

In order to achieve the first objective of this research effort, a survey questionnaire was developed.

Research Propositions and Hypotheses¹

In order to achieve the second objective of this research effort, the following research propositions and their appropriate hypotheses were posed. Support or non-support of the hypotheses pertaining to the research questions were determined by utilization of statistical and criteria tests. Advance prediction on the nature and direction of the results were made in each case on the basis of literature review, interviews, and past experience of the authors.

The specific propositions and hypotheses derived from objective two are:

Proposition 1--Hypotheses 1 through 8

The attitudes of the missile combat crew members toward their job and toward the missile operations career field have improved since the Ashbaugh and Godfrey study in May 1976.

Hypothesis 1. MCCMs' attitudes toward their jobs have improved since May 1976.

¹See Figure 1 for an explanation of the relationship between the research objectives, research questions, propositions and hypotheses.

OBJECTIVE I	OBJECTIVE II			OBJECTIVE III
	Proposition 1	Proposition 2	Proposition 3	
	Hypo 1 Hypo 2 Hypo 3 Hypo 4 Hypo 5 Hypo 6 Hypo 7 Hypo 8	Hypo 9 Hypo 10 Hypo 11 Hypo 12	Hypo 13 Hypo 14 Hypo 15 Hypo 16 Hypo 17 Hypo 18 Hypo 19 Hypo 20 Hypo 21 Hypo 22 Hypo 23 Hypo 24 Hypo 25 Hypo 26 Hypo 27 Hypo 28	Research Ques. 1 Research Ques. 2 Research Ques. 3

Figure 1. Relationship Between Research Objectives, Research Questions, Propositions and Hypotheses

Hypothesis 2. MCCMs' attitudes toward the sense of personal accomplishment they achieve in performing their jobs have improved since May 1976.

Hypothesis 3. MCCMs' attitudes toward the actual work involved in performing their assigned tasks have improved since May 1976.

Hypothesis 4. MCCMs' attitudes toward the adequacy of individual responsibility provided by their jobs have improved since May 1976.

Hypothesis 5. MCCMs' attitudes toward their work schedule have improved since May 1976.

Hypothesis 6. MCCMs' attitudes toward the physical working environment of the Launch Control Center have improved since May 1976.

Hypothesis 7. MCCMs' attitudes toward the effect that their jobs have on their personal lives have improved since May 1976.

Hypothesis 8. MCCMs' attitudes toward promotion opportunity in the missile career field vis-a-vis other Air Force career fields have improved since May 1976.

Proposition 2--Hypotheses 9
through 12

The Minuteman Education Program is an incentive in attracting officers into the missile career field.

Hypothesis 9. A majority of the MCCMs who were volunteers for missile crew duty report that the opportunity of obtaining a master's degree through the MMEP was a significant influence in their decision to volunteer.

Hypothesis 10. A majority of the MCCMs, who have graduated from or are participating in the MMEP, believe that the MMEP is one of the most positive aspects of their missile crew duty.

Hypothesis 11. A majority of the MCCMs believe that the MMEP is a significant career benefit of missile crew duty.

Hypothesis 12. A majority of the MCCMs who participate in the MMEP believe that missile crew duty would be a waste of valuable career time without the MMEP.

Proposition 3--Hypotheses 13
through 28

The current MCCMs have a favorable attitude toward the MMEP.

Hypothesis 13. The change in the Veterans' Administration benefits authorization has led to a more favorable attitude toward the MMEP.

Hypothesis 14. The majority of the MCCMs graduated from or enrolled in the MMEP would have enrolled in the MMEP rather than one of the locally available off-duty graduate education programs even if the costs involved were the same.

Hypothesis 15. The majority of MCCMs currently enrolled in or graduated from the MMEP would have enrolled in one of the graduate degree programs offered by other schools on base had the MMEP not been available.

Hypothesis 16. The majority of MCCMs graduated from or enrolled in the MMEP would have enrolled in the MMEP rather than one of the locally available off-duty graduate education programs even if their duty schedule had been built around the latter as it was with the MMEP.

Hypothesis 17. The majority of MCCMs feel that the AFIT/MMEP is academically more difficult than locally available off-duty graduate education programs.

Hypothesis 18. The majority of the MCCMs believe that the amount and content of the MMEP prerequisite courses are appropriate.

Hypothesis 19. The majority of MCCMs prefer a graduate level management degree program which requires prerequisite courses similar to those currently required by the MBA program offered by the MMEP.

Hypothesis 20. The majority of MCCMs enrolled in or graduated from the MMEP feel that participation in the MMEP improves their duty performance as missile combat crew members.

Hypothesis 21. A majority of MCCMs feel that an advanced degree from the MMEP would enhance their performance in future Air Force assignments more than an advanced degree obtained from other schools offering graduate programs on base.

Hypothesis 22. A majority of MCCMs feel that the Air Force of the future will have a greater need for officers with the type of graduate education provided by the MMEP than for officers with the type of education provided by other schools offering graduate programs on base.

Hypothesis 23. A majority of MCCMs feel that possession of an advanced degree from the MMEP enhances their promotion opportunity more than an advanced degree from other schools offering graduate programs on base.

Hypothesis 24. A majority of MCCMs feel that their supervisors encourage participation in the MMEP.

Hypothesis 25. A majority of MCCMs feel that the local AFIT commander actively promotes enrollment in the MMEP.

Hypothesis 26. A majority of MCCMs feel that the contracting university's resident director actively promotes enrollment in the MMEP.

Hypothesis 27. A majority of MCCMs enrolled in or graduated from the MMEP feel that the local AFIT detachment commander makes every effort possible to help resolve any MMEP related problems they encounter.

Hypothesis 28. The majority of MCCMs enrolled in or graduated from the MMEP feel that the contracting university's resident director makes every effort possible to help resolve any MMEP related problems they encounter.

Research Questions

In order to achieve the third objective of this research effort, the following research questions were posed:

1. Do the MCCMs have a favorable attitude toward replacing the current MMEP curriculum with one of the

academic specialties that have been identified as having a large current and projected shortage?

2. Do the MCCMs feel that some of the graduate level degrees presently offered at their base of assignment are more suitable to their past educational background and current educational goals and preferences than the MBA offered by the MMEP?

3. Would the Minuteman crew members be willing to utilize an alternate form of material presentation in their graduate education program?

CHAPTER II

LITERATURE REVIEW

The literature review for this study is centered upon previously accomplished studies of the missile career field and the Minuteman Education Program.

Previous Missile Career Field Studies

Overview. The attitudes and the motivation of the missile crew force has been researched numerous times since the inception of the first operational Minuteman missile squadron during the early 1960s. The greatest preponderance of the early studies and research accomplished by students of such renowned professional military schools as the Air War College (AWC), Air Command and Staff College (ACSC) and the National War College (NWC) dealt with motivational theory largely based on the work of Maslow, McGregor, Vroom, and Herzberg. Since these initial studies, other research efforts have expanded the area of knowledge to include data of missile combat crew members' (MCCMs) attitudes toward their job, their career field, psycho-social factors, the Missile Management Working Group (MMWG), and the Minuteman Education Program. This research effort will limit

itself to those applicable portions of previous studies dealing with the MCCMs' attitudes toward their job, their career field and their attitude toward the Minuteman Education Program. The research efforts of Petersen, Brooksher and Scott, Ashbaugh and Godfrey, Cancellieri and Willoughby, Engel and O'Neill will each be treated separately.

Petersen. The primary purpose of this study, completed in May 1971, was to compare the opinions and attitudes of 389 former missile crew members with 625 crew members then presently serving on crew duty. Thirty-one specific areas were compared.

Comparisons of the opinions expressed on some twenty-nine items lead to the conclusion that the former crew members were inclined to view most things more optimistically and to express less dissatisfaction than the crew members serving on crew duty at that time (7:ii). Three times as many former crew members saw their present assignment as a step toward a rewarding career and their opinions concerning career development were more optimistic. This means that whatever area the former crew members were presently working within, mainly missile operations, they seemed more favorably impressed by it than those presently assigned to crew duty. Whether or not there is comfort in the fact that forty-one percent of the former crew members considered their current assignment

to be a step in a rewarding career, may be questionable. It is, however, three times as many as were willing to make that statement about crew duty (7:7). The former crew members felt there was more potential for promotion in the missile career field than the individuals then serving on the crew force. Additionally, the former crew members indicated a stronger desire to continue in the career field as a staff officer (7:iii).

Based on the responses to two specific questions --"What influence did the MMEP have on your entry into the Minuteman Program?" and "If you completed the MMEP, are you using your education in your present assignment?"--Peterson concluded that the Minuteman Education Program did not appear to be a major inducement and, in some cases, might create a certain amount of dissatisfaction by educating crew members in fields which they cannot use in their military duties (7:iv). Only 14 to 16 percent of both samples expressed the opinion that the MMEP was an inducement to their entry into the Minuteman Program (7:17). Additionally, 25 percent of the individuals who had completed the MMEP reported finding no use for it in their present assignment (7:24). Finally, the comments to this particular study suggest that when a person seeks to better himself through education, he feels he can only achieve his goals if that education is put to work (7:24).

The study pointed out that a number of important differences existed between the two samples. First, the sample of the former crew members was heavily loaded with respondents who had achieved the status of Combat Crew Commander, and contained very few enlisted personnel. Secondly, distributions of the rank and time of service differed substantially. Finally, and most importantly, the group of former crew members was made up entirely of those who stayed in the Air Force following their tour of crew duty, whereas almost half of the then active crew members indicated an intention to separate from the Air Force (7:ii). It is evident even from a cursory examination of the data that the former crew members constitute a quite different sample from the 625 then active crew members surveyed. Due to these differences, it was virtually impossible to conduct a vigorous statistical analysis on the data. Consequently, the author relied totally on descriptive statistics as the basis for his conclusions. Thus, without the utilization of either parametric or non-parametric statistical tests and adequate employment of confidence levels, the majority of conclusions drawn become suspect.

Petersen. The main purpose of this particular study completed in May 1971, was to ascertain the attitudes

and opinions of the Strategic Air Command missile crew members within twenty-nine surveyed areas.

Comparisons of the opinions expressed lead to the conclusions that over half of the sample felt their chances to be either "Excellent" or "Good" for career development. Despite this, 40 percent felt their job to be a dead end and only 14 percent looked on missile crew duty as a step toward a rewarding career (8:ii-iv). Additionally, the study concluded that the MMEP was less than an unqualified success (8:v). In the first place, over half the sample were not eligible for it and among those who were, only 19 percent rated it as an inducement (8:52-53).

This study was concluded with twenty-one pages of comments by crew members. As would be expected, the bulk of the comments touched on complaints regarding some facet of missile duty. There were some, however, that were positive in nature, proposing solutions to what were seen as problem areas.

Brooksher and Scott. The two purposes of this study were to identify and analyze some of the broad problem areas that have, to some degree, plagued the missile operations career field throughout much of its history and to offer some suggested actions that could be taken to resolve these problems (3:1-2). The areas which

they covered in depth included career field selection, career development, and the USAF officer personnel plan (TOPLINE) (3:12-35).

The research was centered around the collection and analysis of data from three surveys, two informal and one formal. The two unstructured informal surveys were directed toward senior missile commanders and staff officers, recently retired personnel, and middle level staff officers assigned to the 3901st Strategic Missile Evaluation Squadron. The formal structured survey encompassed 479 current and former missile combat crew members. This data was then analyzed under three basic assumptions: (1) The Intercontinental Ballistic Missile (ICBM) force would continue at the same level for the foreseeable future, (2) the ICBM force would continue to be manned, and (3) the size of the crew force would remain stable (3:8-10). Unfortunately this third assumption proved to be false.

In their study the researchers examined two incentive areas: (1) the MMEP and (2) additional pay. Pertaining to the MMEP, they found that the percentage of personnel participating at the various bases ranged from 29.1 percent to 68.5 percent. Overall, 47 percent of the eligibles who responded to the questionnaire were enrolled in the program. The most frequently cited reason for not enrolling in or for dropping from the program was lack of interest in the degree offered (3:84).

As a result of their analysis, the research team concluded that: (1) there needs to be an increase in career field motivators to attract sufficient volunteers to satisfy the manning requirements, (2) the job dissatisfiers, i.e., supervision, career opportunity, and prestige, must be reduced since over 50 percent of those who indicate these areas as the most negative aspect intend to leave the Air Force, and (3) the contention that the MMEP only trains MCCMs to get out of the Air Force is erroneous--in fact, the alternate hypothesis was substantiated (3:86-135). The study showed that the missile career field was a long way from being manned by volunteers and, particularly, from being manned by volunteers whose first choice of career fields was missiles. It was felt that this objective could be achieved by intensification of current procurement efforts coupled with job and career improvements. The intensification of the current procurement effort basically meant that the commissioning institutions should provide more positive information and guidance to young officers so that they would form a positive attitude toward the missile career field (3:86-96). In looking at the job and career improvements the study analyzed the motivators and dissatisfiers as brought out in the results of the crew survey in relation to Herzberg's model. The motivators included achievement, recognition, advancement, responsibility, patriotism,

growth and supervision status. It was concluded that the satisfaction and ego needs of the missile combat crew member had not been satisfied, especially in relation to their contemporaries who perform what they regard as similar duties. This is evidenced in the fact that over 50 percent of those who indicated job dissatisfiers as the most negative aspect of missile duty intend to leave the Air Force (3:97-129). The third conclusion that was reached, that the MMEP is not training crew members to get out of the services, is supported by the fact that 46 percent of the sample expressed the intent to remain in the missile career field whereas 47 percent of the MMEP people expressed the same intent (3:130-135). For a more complete review of the conclusions and recommendations, the reader is referred to the original document.

Ashbaugh and Godfrey. The primary purpose of this thesis was to determine the impact of the SAC Missile Management Working Group on missile combat crew members' attitudes, job satisfaction and retention ratio (1:2-3). Their objectives included: (1) to sample the current attitudes of missile combat crew members toward their career field and their job; (2) to compare these current attitudes with the results of previous studies; (3) to measure the effectiveness of the Minuteman Working Group as perceived by the MCCMs; (4) a comparison of current

retention rates of MCCMs with past rates; and, (5) a comparison of current volunteer rates of MCCMs with past rates (1:20-21). To collect the needed data and achieve their objectives, they developed a survey questionnaire designed to gather data in five areas: (1) demographic, (2) job/career field attitudes, (3) MCCMs' perceptions of the Minuteman Working Group (MMWG), (4) items of interest to SAC, and (5) other factors. The questions were based primarily on the questionnaires used by Brooksher and Scott, and McDaniel and Dodd (1:29-32). Of the 540 questionnaires, 372 responses were received for a response rate of 68.89 percent; however, only 230 responses were from Minuteman combat crew members. The other responses were from Titan crew members. The responses to four questions on the survey were edited due to nonapplicability for the Titan crew members. Three of these questions dealt with the MMEP (1:50).

Using the Mann-Whitney Rank Sum Test, the Chi Square Test for One Sample, the Chi Square Test for Two Independent Samples and practical decision rules to determine if the results of the data analysis were of practical importance, Ashbaugh and Godfrey concluded that: (1) the MCCMs do not have a favorable attitude toward their job or the missile operations career field and they do not perceive that the MMWG has been effective in improving missile duty and removing irritants; (2) the

attitudes of the MCCMs have not changed significantly since the formation of the MMWG; (3) the overwhelming majority of MCCMs are either unaware of the MMWGs existence or they do not feel that the MMWG has been effective (1:112-114). Additionally, they found that the proportion of MCCMs who intend to stay in the career field was less than half of what it was five years prior, even though the request for crew extensions had almost tripled. Although the survey did not provide sufficient data to determine the reasons for the increase in crew extension, the data suggested that it was motivated by factors other than a desire to remain in the missile career field. Two of the probable factors suggested were the civilian economic situation and/or the MMEP (1:114-115).

Cancellieri and Willoughby. This thesis utilized the data obtained from the Ashbaugh and Godfrey study to determine if a difference in attitudes among missile wings existed (4:36-37). The authors felt that if significant differences did exist among the missile wings, it might be possible to find relationships between MCCM attitudes at the various wings and other factors such as demographic variables, or wing policies and procedures. Then any relationship found would not only provide insight into the problem but also serve as a basis for improving MCCMs' attitudes throughout SAC (4:38).

The specific objectives of this thesis were to:

- (1) determine if MCCM attitudes differ from one wing to another;
- (2) determine if the demographic composition of the missile crew force differs from one wing to another;
- (3) determine if any relationships exist between the MCCM attitudes and the demographic composition of the missile crew force from each wing (4:39).

To analyze the data, three non-parametric statistical tests were used in this thesis. These tests included the Kruskal-Wallis One-Way Analysis of Variance (ANOVA) by ranks, the Kendall Coefficient of Concordance: W, and the Chi Square Test for Independent Samples. These tests led Cancellieri and Willoughby to conclude that:

- (1) the MCCM attitudes do differ from one wing to another;
 - (2) the demographic composition of the missile crew force does not differ significantly from one wing to another;
 - (3) there was not a significant correlation between the rank ordering of the wings based on missile crew volunteer status and the rank ordering based on overall MCCM attitudes.
- Therefore, since there was insufficient evidence to conclude that there was a demographic difference no relationship could be implied between the MCCM attitudes and the demographic composition of the missile crew force from each wing (4:109-112).

Cancellieri and Willoughby's conclusions were based on samples taken from not only the Minuteman Missile wings but also the Titan Missile wings. The Titan Missile wings generally ranked higher on the attitude rank ordering scale which indicated a significant relationship between the type of weapon system and the attitudes of the two different categories of crew members. This substantiated Ashbaugh and Godfrey's findings that a significant attitude and weapon system dependency exists. Taking this dependency into consideration, the initial conclusion of the study was reversed. The authors finally concluded that the MCCM attitudes do not differ from one Minuteman wing to another. Of the sixteen hypotheses tested, twelve showed that the Minuteman crew members' attitudes did not differ significantly between the wings (4:61-93).

Engel and O'Neill. The primary purpose of their thesis was to determine: (1) if job and career field attitudes have changed since 1976; (2) MCCM attitudes toward a twenty year career as a crew member; and (3) if the MMEP is in fact an influence on the crew members' decision to volunteer for or remain on a missile combat crew (5:13-15). This thesis additionally gathered and analyzed data concerning the crew forces' perceptions and feelings toward, and reactions to various alternate degree options (5:5). To ascertain the relevant data, they

developed a survey questionnaire primarily based on the questionnaires previously used by Ashbaugh and Godfrey (5:22). However, their survey was expanded to include the MCCM's perceptions of the MMEP and other graduate programs (5:22).

They utilized a sample size of 480 in order to establish a sound basis for statistical inference in generalizing the sample data to the population, and provide compatibility with the previous data base (5:29). Of the 480 questionnaires, 265 were returned for a response rate of 55.2 percent (5:36). This is somewhat lower than the response rate reported by Ashbaugh and Godfrey; however, the return was high enough to provide a 95 percent confidence level to their hypothesis tests.

Using the Mann-Whitney Rank Sum Test, the Chi Square Test for One Sample, the Chi Square Test for Two Independent Samples and descriptive statistics along with practical decision rules to determine if the results of the data analysis were of practical importance in meeting the research objectives, Engel and O'Neill concluded that (1) the attitudes of the MCCMs have changed or improved slightly, but not significantly, since May 1976; (2) the vast majority of crew members do not believe that a career as a MCCM is an attractive idea; (3) the majority of crew members who volunteered for crew duty said the opportunity to earn a master's degree through the MMEP was a major

consideration in attracting them to the missile career field; and (4) the majority of all crew members believed that the MMEP was a significant career benefit of missile duty which not only provides an incentive to attract officers to the missile operations career area, but is also a definite retention factor (5:107). Additionally, the survey data also suggest that MCCMs favor the MMEP because of its academic strength. However, their data also suggests that other factors such as supervisor recommendation and type of degree offered also influence the MCCMs' attitude toward the MMEP (5:108).

Summation of Relevant Findings

Virtually all the previous studies that have been conducted on the Minuteman career field and operations area have attempted to ascertain MCCM attitudes, and provide a basis for improving the attitudes and motivation of crew members. The thesis by Cancellieri and Willoughby centered on the study of the relationships between demographic factors and the missile crew members' attitudes. The thesis by Ashbaugh and Godfrey studied the effect of the SAC Missile Management Working Group on the crew members' attitudes. Finally, the thesis by Engel and O'Neill broke from the mold and pressed into a new area of research, the Minuteman Education Program. They focused their study not only on the attitudes previously

measured, but they attempted to ascertain whether the MMEP was a prime motivator in attracting the crew members and retaining them.

Brooksher and Scott, Ashbaugh and Godfrey, Cancellieri and Willoughby, and Engel and O'Neill all utilized statistical analysis to support the conclusions of their theses. Although the particular statistical tests varied between the studies, all were non-parametric in nature. The conclusions of the Petersen studies did not use statistical analysis; instead, the conclusions are merely author suppositions based on looking at the descriptive statistics of the question responses.

The consensus of prior thought pertaining to the relevant thesis objectives are as follows:

Objective 1. To ascertain the current attitudes of Minuteman Missile combat crew members toward:

a. Their career field and their jobs.

Consensus: All of the studies--Petersen, Brooksher and Scott, Ashbaugh and Godfrey, Cancellieri and Willoughby, and Engel and O'Neill--concluded that the missile combat crew members did not have a favorable attitude toward their jobs nor did they have a favorable attitude toward the missile operations career field.

b. The Minuteman Education Program.

Consensus: Although the initial study by Petersen indicated that the Minuteman Education Program

did not appear a major inducement, and in some cases created a certain amount of dissatisfaction by educating crew members in fields which they cannot use in their military duties; the other studies concluded that the MMEP was a major inducement in attracting MCCMs to the missile career field. The Brookner and Scott thesis concluded that the Minuteman Education Program did not train the missile crew members to get out of the Air Force. The Ashbaugh and Godfrey study made the supposition that the MMEP had a direct bearing on the increase in crew extension requests. Finally the Engel and O'Neill thesis concluded that the opportunity toward a master's degree through the MMEP was a major consideration in attracting them to the Missile Career field. Additionally, the crew members believed that the MMEP is a significant career benefit of missile duty and aided retention.

Objective 2: To compare the current attitudes of Minuteman Missile crew members with the results of previous studies to determine whether a significant difference in the attitude has occurred in the last four years in the areas of their job, their career field, and the MMEP.

a. Job and Career field.

Consensus: The only study that indicated any significant shift in attitude was the Petersen study completed in 1971. It revealed a downward attitudinal

shift from the former crew members to the then present crew members. From that study to the present no other significant attitudinal changes have been noted.

b. MMEP as an incentive.

Consensus: The initial study by Petersen showed that approximately only 14 percent of the MCCMs felt that the MMEP was an inducement to enter the missile career field. Both the Brooksher and Scott and the Ashbaugh and Godfrey theses indicated that the MMEP was a moderate inducement for entry into the missile career field. Finally, the Engel and O'Neill thesis concluded that the opportunity to earn a master's degree was a major consideration in attracting them to the missile career field.

c. Attitudes toward the MMEP.

Consensus: The Ashbaugh and Godfrey thesis indicated that the MMEP was a moderate inducement for entry into the missile career field whereas the Engel and O'Neill thesis concluded that the MMEP was a major inducement in attracting officers to the missile career field. From these two studies it can be assumed that either the attitude toward the MMEP had improved from 1976 to 1978, or the additional questions in the Engel and O'Neill study led to a more favorable conclusion.

The third objective was not previously examined, therefore, a consensus of prior opinion cannot be drawn.

CHAPTER III

METHODOLOGY

The Survey Questionnaire

The instrument used to obtain necessary data on MCCM attitudes and perceptions was a survey questionnaire. (A sample of the survey instrument can be found in Appendix A.) The survey questionnaire was chosen for its efficiency. All six of the Minuteman Missile wings could be simultaneously polled for data. A portion of the questions on the survey were duplicated from previous studies by Ashbaugh and Godfrey (1976) and Engel and O'Neill (1978) in order to provide a direct basis for comparison. The questionnaire was designed to gather data in six general areas:

1. Demographic,
2. Job/career field attitudes,
3. Perceptions of current MMEP,
4. Perceptions of alternate curriculums within MMEP,
5. Perceptions of alternative course presentation methods, and
6. Perceptions of alternate graduate degree programs.

The demographic data gathered by the first sixteen questions were used to facilitate cross tabulation of attitudinal data with specific demographic characteristics. For instance, determination of the number/proportion of second lieutenants that responded to a question concerning MMEP as an incentive for entering the career field. A portion of the job/career field and current MMEP attitude questions were used to determine if attitudes had changed since previous studies were conducted. All the questions pertaining to alternate curriculum within MMEP and alternative course presentation provide new data not previously elicited in prior studies. Questions which related to alternate graduate degree programs were included to determine crew member preference and attitudes toward these programs.

The questionnaire was broken out into four parts; Part I was answered by all crew members; Part II was answered by participants in and graduates of the MMEP; Part III was answered by non-participants of the MMEP; and Part IV contained open ended questions answered by all crew members. There were sixty-three questions overall.

The Survey Subjects

The individual missile combat crew member (MCCM) was the subject of this research. Each individual survey questionnaire representing the attitudes and opinions of an individual MCCM was numbered to facilitate the collection and summarization of data.

Variables for Testing

Job Attitude

Job attitude is the attitude of the MCCM toward his particular job and was sampled at the ordinal level based on the responses to seven attitude questions on the survey questionnaire. Each question had five possible responses, so the data are classified as discrete limited. The distribution of responses to each question on the current survey was compared to the distribution of responses on the Ashbaugh and Godfrey survey and the Engel and O'Neill survey to determine if a statistically significant difference from 1976 to the present time exists. The aspects of job attitude examined were:

1. General attitude toward job,
2. Sense of personal accomplishment,
3. Adequacy of responsibility, and
4. Effect on personal life.

Career Field Attitude

Career field attitude is the attitude of the MCCM toward the missile career field and was sampled by responses to one attitude question. The question was sampled at the ordinal level and was classified as discrete limited. The question dealt with a distinct aspect of career field attitude and was treated separately. The aspect of career field attitude examined was: promotion opportunity in missile career field.

Perception of the MMEP

The perception of the MMEP is the perception of the MCCM toward MMEP and was sampled by responses to eighteen questions on the survey questionnaire. Seven of these questions had been asked in prior studies since 1976.

All eighteen of the questions sampled at the ordinal level and were classified as discrete limited. Each question dealt with a distinct aspect of the perception of the MMEP. The aspects of the MCCMs' attitudes toward the MMEP examined were:

1. General attitude toward MMEP,
2. Attitude toward necessity of an advanced degree,
3. MMEP as a benefit of missile duty,
4. MMEP as a retention factor in missile operations field,
5. MMEP as an incentive to volunteer for missile duty,
6. MCCMs' perceptions of AFIT detachment commander,
7. MCCMs' perceptions of the program resident director, and
8. Degree of program difficulty.

Attitudes Toward Alternate MMEP Curriculum

These questions were generated to identify attitudes toward other curriculums centered around academic

specialities that have been identified with a large current and projected shortage within the USAF. The attitudes of MCCMs toward alternate MMEP curriculums were sampled by responses to four questions on the survey questionnaire. Three of the questions sampled at the ordinal level and were classified as discrete limited, while the remaining question was at the nominal level.

Attitudes Toward Alternative
Course Presentation Methods
Within the MMEP

These questions were generated to identify attitudes toward other methods of course presentation within the MMEP, such as the electronic blackboard. The attitudes of the MCCMs' toward alternative course presentation methods within the MMEP were sampled by responses to seven questions on the survey questionnaire. All seven of the questions sampled at the ordinal level and were classified as discrete limited.

Attitudes Toward Alternate
Graduate Education Programs

These questions were generated to identify attitudes toward other educational programs that compete with the MMEP for the participation of the MCCM. The attitudes of the MCCM toward alternate graduate education programs were sampled by responses to six questions on the survey questionnaire. Four of the questions sampled at the

ordinal level and were classified as discrete limited. The remaining two questions sampled at the nominal level.

Other

Three open ended questions were included for direct crew member feedback. The questions addressed perception of merit and attraction of the MMEP, opinion on how the program should be changed and perception of what forms of course presentation would encourage participation in the MMEP.

The Universe

The universe consisted of all certified MCCMs assigned to the six operational Strategic Missile wings of the Minuteman weapon system. The six Minuteman wings are located at:

1. Malmstrom Air Force Base, Montana
2. Ellsworth Air Force Base, South Dakota
3. Minot Air Force Base, North Dakota
4. Whiteman Air Force Base, Missouri
5. F. E. Warren Air Force Base, Wyoming
6. Grand Forks Air Force Base, North Dakota

The Population

The population consisted of the attitudes and perceptions of the certified missile combat crew members assigned to the six Minuteman wings as pertaining to their

job/career field, the MMEP, alternative curriculums within MMEP, alternate course presentation methods within MMEP, and other graduate education programs.

Sampling Plan

As of 4 August 1979, HQ SAC records reflected a total of 1,200 Minuteman crew member authorizations of which 1,168 were presently filled by incumbents. These 1,168 Minuteman crew members constitute the universe for this study. Since previous thesis efforts by Ashbaugh and Godfrey and Engel and O'Neill utilized a 95% confidence interval to base their statistical analysis upon it was felt that this would be an appropriate confidence level to maintain during this research effort (1:37; 5:28). This would not only maintain a high degree of reliability but it would also aid in the cross evaluation of the data between the three separate thesis efforts.

"The following is the general formula for computing the maximum sample size based on population proportions."

$$n = \frac{[Z(1-\alpha/2)]^2 p(1-p)}{h^2}$$

where:

n = sample size,

p = maximum sample size factor (.5),

h = half width (.06),

Z = factor of assurance (1.96) for 95 percent confidence level. (11:300)

The term $p(1-p)$ takes on its largest value when $p=.5$ and becomes smaller as p approaches 0 or 1. This implies that if no reliable planning value for p can be specified and a conservatively large sample size is desired, the planning value for p should be set equal to .5 in computing $n[11:300]$.

Computation of this formula for $n=1,168$ yields a sample size (n) of 267. A sample size of 480 was used in order to insure a return rate necessary to obtain the desired significance level and to establish a sound basis for statistical inference in generalizing the sample data population. It provided greater compatability with the sample size used by Ashbaugh and Godfrey (540) and Engel and O'Neill (480).

The possibility of biased data exists due to nonrespondents. This bias could have been introduced if the attitudes and opinions of the nonrespondents were different than those of the crew members who chose to respond. However, for the purposes of determining if there was a shift in the distribution of responses between the current survey and the previous two surveys, it was assumed that there was no difference in the reasons for nonresponse. The response rate reported by Ashbaugh and Godfrey was 68.89 percent and the response rate by Engel and O'Neill was 55.20 percent. Accordingly, any bias in the current sample data, due to nonrespondents, was assumed to be the same as the bias in the previous two sets of sample data; therefore, it was assumed that the three

data bases could be compared without limitation in terms of the distribution of responses to individual questions. Furthermore, it was assumed that the responses to the prior two surveys and the current survey represent the honest opinions of the MCCM respondents.

Data Collection

The sampling plan used for this research was a disproportionate random sample. The 480 individual members were identified by a computerized random selection of eighty MCCMs for each wing. The survey questionnaires were distributed to the AFIT detachment commander at each of the missile wing bases. The detachment commander then distributed a copy of the questionnaire to each individual member of the sample. When completed, the questionnaires were returned for data analysis via the detachment commander. Upon receipt of the questionnaires, individual question responses were input to a computer data base to facilitate analysis. The data was grouped by respondent and summarized by question.

Statistical Tests

The first step in the data analysis was to total the individual responses to each question on the survey. This produced the distribution of the sample MCCM responses to specific questions. Statistical inferences were then required to provide explanations for particular

responses and justifications for generalization to the population (9:41). The non-parametric tests were used to make these inferences since non-parametric tests require no assumptions about the population distribution. Certain assumptions are associated with most non-parametric statistical tests, i.e., that the observations are independent and that the variable under study has underlying continuity; however these assumptions are fewer and much less restrictive than those associated with parametric tests (9:31).

Chi Square Test:
One Sample

The χ^2 One-Sample Test was used to determine whether a significant difference existed between an observed number of responses that fell into each category and the expected number based on the null hypothesis (9:43). In order to be able to compare the observed frequencies with the expected frequencies the null hypothesis (H_0) is computed by the formula:

$$\chi^2 = \sum_{i=1}^k \frac{(O_i - E_i)^2}{E_i}$$

where:

O_i = the observed number of cases categorized in the i th category

E_i = expected number of cases in i th category under H_0

$\sum_{i=1}^k$ = directs one to sum over all (k) categories

Normally the null hypothesis, H_0 , was that the responses would be uniformly distributed across the alternatives provided on each specific question. If this is the case and the agreement between the observed and expected frequency is close the difference will be small and therefore χ^2 will also be small. However, if the difference is large the value of χ^2 will also be relatively large. The larger the value of χ^2 the more likely that the observed frequencies did not come from the population on which the null hypothesis is based (9:43). The hypotheses were tested at a .05 level of significance in the predicted direction with one degree of freedom. The size of the degrees of freedom (df) reflects the number of observations that are free to vary after certain restrictions have been placed on the data (9:44). In general, for the one sample case, when H_0 fully specifies the E_i 's the

df=k-1, where k stands for the number of categories in the classification. For a one-tailed test for significance in the predicted direction with one degree of freedom, $\chi^2_c = 3.84$. If the probability associated with the occurrence under H_0 of the obtained χ^2 for one degree of freedom is greater than the value for χ^2_c , H_0 will be rejected. When the results do not lie in the predicted direction, statistical significance will be determined through the use of a two-tailed test. In this particular situation, with one degree of freedom, $\chi^2_c = 5.02$. Therefore applying the same statistical rule, reject when $\chi^2 > \chi^2_c$, H_0 will be rejected when $\chi^2 > 5.02$.

Mann-Whitney U Test

When at least ordinal measurement has been achieved, the Mann Whitney U Test may be used to test whether two independent groups have been drawn from the same population. This is accomplished by testing for central tendency between the two populations (9:116). This is one of the most powerful of the nonparametric tests and can be used as an alternative to the parametric T test when the measurement in the research is weaker than interval scaling (9:116).

If the Mann-Whitney test is applied to data which might properly be analyzed by the most powerful parametric test, the T test, its power efficiency approaches $3/\pi = 95.5$ percent as N increases (Mood, 1954), and is close to 95 per cent even for moderate

size samples. It is therefore an excellent alternative to the T test, and of course it does not have the restrictive assumptions and requirements associated with the T test [9:126].

The Mann-Whitney U Test was used to test the hypotheses based on questions providing ordinal data. It was used to determine if there was a statistical significant difference between the distribution of the responses from previous questionnaires and the current questionnaire (9:116). In comparing the responses from the two questionnaires, the null hypothesis, H_0 , was that the two populations had the same distribution. The alternate hypothesis, against which H_0 is tested, was that one population was stochastically larger than the other population, this is therefore a directional hypothesis (9:116). If "a" is one observation from population "A," and "b" is one observation from population "B," $H_0: P(a > b) = 1/2$ and $H_1: P(a > b) > 1/2$. When H_0 is rejected, this implies that the bulk of the population A is higher than the bulk of the population B, therefore the distribution of population A has shifted in the predicted direction (9:116). If the shift in the population distribution was not in the predicted direction a two-tailed test was used for statistical significance. A two-tailed test was used in these cases because there was no a priori knowledge to serve as a basis for the directional hypothesis. In this situation $H_1: P(a > b) \neq 1/2$ (9:116).

When applying the Mann-Whitney test, n_1 equalled the number of cases in the smaller of the two groups and n_2 equalled the number of cases in the larger group. The observations from both groups were combined and ranked in order of increasing size and U was the sum of the ranks of n_1 (9:120).

In the case of large sample sizes ($n_2 > 20$), the sampling distribution in the Mann-Whitney test approaches the normal distribution, with

$$\text{Mean} = \mu = \frac{n_1 n_2}{2}$$

$$\text{Standard Deviation} = \sigma = \frac{(n_1)(n_2)(n_1 + n_2 + 1)}{12}$$

$$\text{and a computed } Z \text{ value} = \frac{U - \mu}{\sigma} \quad (9:121)$$

The Mann-Whitney test assumes that the measured observations are independent and represent a distribution which has an underlying continuity (9:123). With the exact measurement of a variable with underlying continuity the probability of a tie is considered to be zero (9:123). However, with the measures employed in research, and used in this research, ties did occur. Therefore, when tied scores did occur it was assumed that the observations

which obtained tied scores were really different, but that this difference was too minute for detection. Hence these ties were accounted for by giving the responses the average of the ranks they would have had if no ties had occurred (9:123-124). The correction for the ties was applied to the standard deviation of the sampling distribution. To simplify the calculations involved in resolving the hypothesis via the Mann-Whitney U Test, a FORTRAN computer program was used to process the data (see Appendix B.)

Descriptive Statistics

Descriptive statistics were applied to the data which was obtained from the responses to the questions which dealt with the alternate MMEP curriculums, alternative course presentation methods, and alternate graduate education programs.

In analysis of the survey questions previously posed by the Ashbaugh and Godfrey, and Engel and O'Neill theses, the Mann-Whitney U Test was used to determine if there was a significant difference between the distribution of the responses from the previous surveys and the authors' survey. This enabled the authors to expand the time basis and check for a significant change over a longer period of time, thereby decreasing the potential of a significant change going unnoticed. Additionally, the questions were cross-tabulated with the data from the

demographic questions and with responses from the other survey questions, this allowed the use of descriptive statistics to help explain the correlation between the response from one question to another question.

To analyze the questions not previously posed by Ashbaugh and Godfrey, and Engel and O'Neill, the authors tested the questions against a uniform distribution and analyzed the results with the Chi-Square Goodness of Fit Test. Then descriptive statistics were applied to analyze and explain the correlation between the responses.

Criteria Tests

In addition to the statistical tests applied to the research data, practical decision rules were required. These decision rules, or criteria tests were used to determine if the results of the data analysis were of practical importance in meeting the research objectives.

In order to confirm proposition 1, that the attitudes of the MCCMs toward their jobs and toward the missile operations career field have improved since the Ashbaugh and Godfrey study in May 1976, findings of statistically significant improvements had to be noted. Data from the current questionnaire were compared to data from the previous survey to ascertain support or nonsupport for each of the eight hypotheses under proposition 1. Support for

hypothesis 1 and support for at least four of the remaining seven hypotheses was considered necessary to constitute support for the proposition.

Proposition 2, The Minuteman Education Program is an incentive in attracting officers into the missile career field, was evaluated by testing the data obtained from the recent survey. The authors decided that proposition 2 would be supported if two of the four hypotheses were supported.

Proposition 3, the current MCCMs have a favorable attitude toward the MMEP, was evaluated by testing the data obtained from the recent survey. The authors decided that proposition 3 would be supported if ten of the sixteen hypotheses were supported.

In order to answer research question 1, "DO the MCCMs have a favorable attitude toward replacing the current MMEP curriculum with one of the academic specialties that have been identified as having a large current and projected shortage?," descriptive statistical techniques were employed. The Statistical Package for the Social Sciences Program "CROSSTABS" was used to show how strongly variables in the survey were related to each other (See Appendix D). The CROSSTABS program depicts measure of association with a crosstabulation table. A measure of association indicates how strongly two variables are related to each other. In the case of the survey

questionnaire, it depicted the responses of one question as opposed to the responses of another question. Taking into account the characteristics of the questions themselves and the measure of association of the responses, inferences were drawn from the relationship. Thereby, analysis of specific survey questions revealed the preference of the crew members.

Research Question 2, "Do the MCCMs feel that some of the graduate level degrees presently offered at their base of assignment are more suitable to their past educational background and current educational goals and preferences than the MBA offered by the MMEP?," was answered in the same manner as described for question 1.

Research Question 3, "Would the Minuteman crew members be willing to utilize an alternate form of material presentation in their graduate education program?," was answered in the same manner as in question 1.

CHAPTER IV

DATA ANALYSIS

Introduction

This chapter describes the analysis of the data collected for this research and answers the research propositions and hypotheses developed to satisfy propositions 1, 2, and 3 of objective 2, and research questions 1, 2, and 3 of objective 3 as listed in Chapter I.

Data Collection

There were 480 questionnaires sent to the AFIT detachment commanders at the six Minuteman missile wings during February 1980. Two hundred eighty-three completed questionnaires were returned for a response rate of 59 percent. The response rate of individual missile wings differed greatly, ranging from a high of 75 percent at Minot to a low of 39 percent for Malmstrom. A complete summary of the questionnaire responses are located in Appendix A.

The responses for the individual questionnaires were marked on optical-scan answer sheets by the crew members. This allowed compilation by computer. These answers were then automatically transferred to a data file

where they were accessed for analysis. This reduced the probability of error due to transferring the raw data by hand. Five surveys were encountered where respondents had not completed the questionnaires correctly. These five surveys were eliminated from the data base prior to statistical analysis.

A demographic profile of the current survey respondents compared to the Ashbaugh and Godfrey survey and the Engel and O'Neill survey is presented in Appendix C. In general, the current survey population was comprised of a greater number of volunteers for missile crew duty, less combat ready experience, and more missile combat crew commanders than the two previous studies. In addition, the current survey population was comprised of more first lieutenants than either of the two previous studies as well as more captains than the Engel and O'Neill study, but less captains than the Ashbaugh and Godfrey study. The current survey had less majors than either one of the two previous studies. The current survey was comprised of more Air Force Academy graduates and Reserve Officer Training Corps (ROTC) graduates than the two previous studies. The percentage of crew members with intentions to make the Air Force a career was almost identical in both the Ashbaugh and Godfrey, and, Engel and O'Neill studies. However, this percentage dropped twelve points,

from 78 percent to 66 percent when the current survey was compared to the Engel and O'Neill study (1978).

Presentation Format

The presentation of the data analysis will be by research objective as presented in Chapter I. After restating the objective, either a proposition and hypothesis or a research question will be restated as well as the survey question and its responses. The research questions will be analyzed with a discussion format while the hypotheses will be presented in five parts using the following format:

1. The direction of each hypothesis will be confirmed or contradicted according to the data results.
2. The results of the statistical test will be stated to show if the hypothesis test was statistically significant at the $\alpha = .05$ level.
3. The hypothesis will be related to the proposition to show if the hypothesis, in fact, does support the proposition.
4. Tables will be incorporated into each analysis of the hypothesis to present the data collected and the test results for the hypothesis. The

computed and critical test values, and the p-value (actual level at which the statistical tests was significant) will also be shown.

5. Finally, for each hypothesis, comments will be made concerning various relationships that were found to exist.

Several of the hypothesis tests used grouped data. In the Mann-Whitney test, "yes" answers were referred to as affirmative or favorable, and "no" answers were referred to as negative or unfavorable. In the Chi-Square One Sample Test the data were combined into two groups. The one group comprised of the "yes" responses were referred to as favorable while the second group comprised of the "neutral" as well as the "no" responses were referred to as unfavorable or other. Survey questions 41, 54, and 57 were the exceptions to this rule. In these three questions the "favorable" group was comprised of the two no responses and the "unfavorable" or "other" group was comprised of the two yes responses as well as neutral responses.

Conclusions pertinent to the proposition will follow the statistical tests.

Analysis

Objective 2

To compare the current attitudes of the Minuteman combat crew members with the results of the previous studies to determine whether a significant difference in attitudes has occurred in the last four years in the area of their job, their career field, and the MMEP.

Proposition 1--(Hypotheses 1 through 8). The attitudes of the missile combat crew members toward their job and the missile operations career field have improved since the Ashbaugh and Godfrey study in May 1976.

Hypothesis 1.

MCCMs' attitudes toward their jobs have improved since May 1976.

1. Survey question 17. Do you like your job?
 - a. A definite yes
 - b. A qualified yes
 - c. Neutral
 - d. A qualified no
 - e. A definite no
2. Findings
 - a. Movement: Not in predicted direction
 - b. Significance: Not statistically significant
 - c. Support: Does not offer practical support.

Table 1
JOB ATTITUDE
(Mann-Whitney Rank Sum Test)

Data Source	Favorable			Unfavorable	
	A	B	C	D	E
A & G (N = 229)	27	79	36	41	46
E & O (N = 265)	42	98	29	54	42
Current Responses: (N = 278)	47	59	48	50	74

A & G to E & O	$Z_0 = 1.460$ Z_C (one tailed test) = 1.645 $P = .0721$
E & O to Current	$Z_0 = -2.688$ Z_C (two tailed test) = -1.960 .0072 < p < .0074
A & G to Current	* $Z_0 = -1.278$ Z_C (two tailed test) = -1.960 .2006 < p < .2040

*The computed Z statistic is represented by Z_0 , the critical Z statistic is represented by Z_C .

3. Comments: A non-significant decline in the MCCMs attitudes toward their job occurred between the Ashbaugh and Godfrey study in 1976 and the current study in 1980. However, the attitudes improved between 1976 and 1978 and then reversed themselves in a significant decline between 1978 and the current study.

Seventy-three percent of the MCCMs at Ellsworth like their job, while 69 percent of the crew members at Grand Forks, 61 percent of the crew members at Malmstrom and Whiteman, 53 percent at Minot, and 47 percent of the MCCMs at F. E. Warren like their jobs.

The status of enrollment in the MMEP did not seem to have a direct effect on the individual crew members perception of his job.

Hypothesis 2.

MCCMs' attitudes toward the sense of personal accomplishment they achieve in performing their jobs have improved since May 1976.

1. Survey question 18. Do you feel a sense of personal accomplishment when performing your job?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

2. Findings (Table 2)

- a. Movement: In predicted direction
- b. Significance: Statistically significant
- c. Support: Does offer practical support

Table 2

PERSONAL ACCOMPLISHMENT (Mann-Whitney Rank Sum Test)

Data Source	Favorable			Unfavorable	
	A	B	C	D	E
A & G (N = 229)	29	77	29	48	46
E & O (N = 265)	61	97	29	40	38
Current Responses: (N = 278)	63	97	35	45	38

A & G to E & O $z_0 = 3.412$
 z_C (one tailed test) = 1.645
 $p = .0003$

E & O to Current $z_0 = -0.231$
 z_C (two tailed test) = -1.960
 $.8104 < p < .8180$

A & G to Current $z_0 = 3.246$
 z_C (one tailed test) = 1.645
 $p = .0006$

3. Comments: Between the Ashbaugh and Godfrey survey and Engel and O'Neill's survey a significant improvement took place in the sense of personal accomplishment that the crew members experienced. This improvement was also noted when the Ashbaugh and Godfrey results were compared with the current study. However, when the results of the Engel and O'Neill survey were compared to the current results a non-significant decline in the sense of personal accomplishment had been experienced by the MCCMs. Although this was non-significant it should be noted.

Fifty-two percent of the line and 58 percent of the instructors perceived a sense of personal accomplishment while performing their job. Eighty-three percent of the standboard crew members perceived this same sense of personal accomplishment.

A difference in the responses by base was noted between the current study and the Engel and O'Neill study. Engel and O'Neill indicated that they had a high of 72 percent at Grand Forks and Minot and a low of 33 percent at F.E. Warren; whereas, the current study showed that the lower end of the range increased 16 percent and went from a low of 59 percent at F. E. Warren to a high of 74 percent at Malmstrom.

Hypothesis 3.

MCCMs' attitudes toward the actual work involved in performing their assigned tasks have improved since May 1976.

1. Survey question 19. Do you enjoy doing the actual work involved in accomplishing your job?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

2. Findings (Table 3)

- a. Movement: In predicted direction
- b. Significance: Not statistically significant
- c. Support: Does not offer practical support

3. Comments: The MCCMs attitudes toward the actual work involved in performing their assigned tasks improved significantly between the Ashbaugh and Godfrey study and the Engel and O'Neill study. However, the trend reversed itself between the Engel and O'Neill study and the current study. Although the reversal in attitudes is not significant it should be noted. Statistically, the attitudes toward the actual work involved in accomplishing the job has not changed between 1976 and 1980.

Table 3
WORK ATTITUDE
(Mann-Whitney Rank Sum Test)

Data Source	Favorable			Unfavorable	
	A	B	C	D	E
A & G (N = 229)	39	76	29	40	45
E & O (N = 265)	58	100	38	38	31
Current Responses: (N = 278)	49	99	41	56	33

A & G to E & O	$Z_0 = 2.584$
	Z_C (one tailed test) = 1.645
	$.0048 < p < .0049$
E & O to Current	$Z_0 = -1.591$
	Z_C (two tailed test) = -1.960
	$.1096 < p < .1118$
A & G to Current	$Z_0 = 1.221$
	Z_C (one tailed test) = 1.645
	$.1093 < p < .1112$

MCCMs attitudes toward the enjoyment of the actual work of a crew member varied relative to the type of crew assigned. Only 48 percent of the line crew members answered that they enjoyed their work, while 56 percent of the instructors, and 76 percent of the standboard crew members reported enjoying their work. These results showed a decline from the 1978 study.

The percentage of crew members who enjoy their work declined as the grade increased. This is virtually the same conclusion that Engel and O'Neill derived. In the 1978 study, 62 percent of the lieutenants, 59 percent of the captains, and 45 percent of the majors liked their work. In the current study 60 percent of the lieutenants, 45 percent of the captains, and only 40 percent of the majors liked their work.

As the educational level of the MCCMs increased, the enjoyment they derived from accomplishing their job decreased. Sixty-eight percent of the MCCMs holding a bachelors degree, 41 percent with a masters degree, and only 20 percent with more than one masters reported enjoying the actual work involved in their jobs.

Hypothesis 4.

MCCMs' attitudes toward the adequacy of individual responsibility provided by their jobs have improved since May 1976.

1. Survey question 20. Do you feel that you are given adequate individual responsibility in your job?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

2. Findings (Table 4)

- a. Movement: In predicted direction
- b. Significance: Not statistically significant
- c. Support: Does not offer practical support

3. Comments: The MCCMs' perceptions of the adequacy of the individual responsibility showed a statistically significant improvement between the Ashbaugh and Godfrey study and the Engel and O'Neill study. However, this trend was reversed between the Engel and O'Neill study and the current study. Consequently, over the past four years, there was not a significant improvement in the MCCMs' perceptions of individual responsibility.

Fifty-five percent of the line crew members felt there was adequate individual responsibility; whereas, 67 percent of the instructors and 92 percent of the stand-board crew members felt there was adequate responsibility in their jobs. The instructor attitudes have declined by 12 percent in the last four years; however, the line crew

Table 4
INDIVIDUAL RESPONSIBILITY
(Mann-Whitney Rank Sum Test)

Data Source	Favorable			Unfavorable	
	A	B	C	D	E
A & G (N = 230)	59	67	20	42	42
E & O (N = 265)	84	100	17	38	26
Current Responses: (N = 278)	75	99	22	37	45

A & G to E & O	$Z_0 = 3.041$ Z_C (one tailed test) = 1.645 .0011 < p < .0012
E & O to Current	$Z_0 = -1.880$ Z_C (two tailed test) = -1.960 p = .0602
A & G to Current	$Z_0 = 1.269$ Z_C (one tailed test) = 1.645 .1038 < p < .1020

members attitudes have improved by 2 percent over the same time frame.

As the grade of the crew members increased their attitudes toward the adequacy of the individual responsibility declined. Sixty-seven percent of the lieutenants answered affirmatively compared with 57 percent of the captains and 50 percent of the majors.

As the academic level went up, the attitudes toward individual responsibility went down. Seventy one percent of the MCCMs holding a bachelors degree answered affirmatively compared with 52 percent holding a masters degree and 20 percent holding more than one masters degree.

Hypothesis 5.

MCCMs' attitudes toward their work schedule have improved since May 1976.

1. Survey question 21. Are you satisfied with your work schedule?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

2. Findings (Table 5)

- a. Movement: Not in predicted direction
- b. Significance: Statistically significant
- c. Support: Does not offer practical support

Table 5

WORK SCHEDULE
(Mann-Whitney Rank Sum Test)

Data Source	Favorable			Unfavorable	
	A	B	C	D	E
A & G (N = 229)	23	89	29	58	31
E & O (N = 265)	16	84	47	57	61
Current Responses: (N = 278)	25	89	27	58	79

A & G to E & O $Z_0 = -2.672$
 Z_C (two tailed test) = -1.960
 $.0074 < p < .0076$

E & O to Current $Z_0 = -0.0320$
 Z_C (two tailed test) = -1.960
 $p = .749$

A & G to Current $Z_0 = -2.858$
 Z_C (two tailed test) = -1.960
 $.0042 < p < .0044$

3. Comments: There was a significant decline in the MCCMs attitudes toward their work schedule from 1976 to the current study. However, the majority of the decline occurred between 1976 and 1978. The trend slowed down considerably between 1978 and the current study but it is still declining.

The attitudes toward the work schedule seem to be related to particular bases. Minot with 25 percent showed the lowest amount of satisfaction with the work schedule, F. E. Warren with 27 percent was the second lowest, then came Malmstrom with 42 percent, Whiteman with 46 percent, Grand Forks with 55 percent and the highest was Ellsworth with 56 percent.

Hypothesis 6.

MCCMs' attitudes toward the physical working environment of the Launch Control Center have improved since May 1976.

1. Survey question 22. Do you consider the physical working environment of the capsule (Launch Control Center) to be satisfactory?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

2. Findings (Table 6)

- a. Movement: Not in predicted direction
- b. Significance: Statistically significant
- c. Support: Does not offer practical support

Table 6

PHYSICAL WORKING ENVIRONMENT
(Mann-Whitney Rank Sum Test)

Data Source	Favorable			Unfavorable	
	A	B	C	D	E
A & G (N = 230)	14	77	37	52	50
E & O (N = 265)	12	76	35	73	69
Current Responses: (N = 278)	14	52	36	81	95
A & G to E & O	$Z_0 = -1.834$ Z_C (two tailed test) = -1.960 $.0672 < p < .0658$				
E & O to Current	$Z_0 = -2.5460$ Z_C (two tailed test) = -1.960 $.0110 < p < .0108$				
A & G to Current	$Z_0 = -4.228$ Z_C (two tailed test) = -1.960 $p < .0001$				

3. Comments: The percentage of MCCMs who consider the working environment of the Launch Control Center satisfactory has shown a constant decline since May 1976. Ashbaugh and Godfrey reported that 40 percent of the MCCMs answered with a favorable response, Engel and O'Neill reported 33 percent, and the current study found that only 24 percent of the MCCMs felt the working environment in the Launch Control Center was satisfactory.

Hypothesis 7.

MCCMs' attitudes toward the effect that their jobs have on their personal lives have improved since May 1976.

1. Survey question 23. Does your job have a favorable effect on your personal life?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- a. A definite no

2. Findings (Table 7)

- a. Movement: Not in predicted direction
- b. Significance: Not statistically significant
- c. Support: Does not offer practical support

TABLE 7
JOB EFFECT ON PERSONAL LIFE
(Mann-Whitney Rank Sum Test)

Data Source	Favorable			Unfavorable	
	A	B	C	D	E
A & G (N = 229)	8	48	50	71	52
E & O (N = 265)	11	56	62	62	74
Current Responses: (N = 278)	17	31	74	74	82

A & G to E & O	$Z_0 = -0.202$ Z_C (two tailed test) = -1.960 .8336 < p < .8414
E & O to Current	$Z_0 = -1.067$ Z_C (two tailed test) = -1.960 .2846 < p < .2892
A & G to Current	$Z_0 = -1.470$ Z_C (two tailed test) = -1.960 p = .1416

3. Comments: Analysis of the foregoing data revealed a non-significant decline in effects of the job on the personal life of the crew members. The analysis between the Ashbaugh and Godfrey study and the Engel and O'Neill study showed a slight decrease in the attitudes; whereas, the analysis between the Engel and O'Neill study and the current study showed a larger decrease in the attitudes of the crew. However, neither of these were statistically significant.

Only 17 percent of the crew members perceived that the crew duty had a favorable effect on their personal life. This declined from 28 percent in 1976, and 25 percent in 1978. Additionally, the attitudes seemed to have been related to the particular bases. Malmstrom ranked first at 61 percent; whereas, the other bases declined significantly. The percentage for the other bases are: Grand Forks 21 percent, Minot 15 percent, F. E. Warren 14 percent, Ellsworth 11 percent, and Whiteman 8 percent.

Hypothesis 8.

MCCMs' attitudes toward promotion opportunity in the missile career field vis-a-vis other Air Force career fields have improved since May 1976.

1. Survey question 24. Do you think the opportunity for advancement in the missile operations field is at least as good as other Air Force career fields?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

2. Findings (Table 8)

- a. Movement: In predicted direction
- b. Significance: Not statistically significant
- c. Support: Does not offer practical support

3. Comments. The MCCMs attitudes towards opportunity for advancement improved by 2 percent between the Ashbaugh and Godfrey study and the Engel and O'Neill study. The MCCMs attitudes reversed from the Engel and O'Neill study to the current study, decreasing from 48 percent favorable response in 1978 to 45 percent favorable response in 1980. Over the past four years, the MCCMs attitudes towards opportunity for advancement did not change significantly.

Table 8
ADVANCEMENT
(Mann-Whitney Rank Sum Test)

Data Source	Favorable			Unfavorable	
	A	B	C	D	E
A & G (N = 229)	34	72	36	46	41
E & O (N = 265)	29	99	50	60	27
Current Responses: (N = 278)	39	87	52	54	46
<hr/>					
A & G to E & O	$Z_0 = 0.776$				
	Z_C (one tailed test) = 1.645				
	$.2206 < p < .2177$				
E & O to Current	$Z_0 = -0.743$				
	Z_C (two tailed test) = -1.960				
	$.4592 < p < .4532$				
A & G to Current	$Z_0 = 0.081$				
	Z_C (one tailed test) = 1.645				
	$.4681 < p < .4641$				

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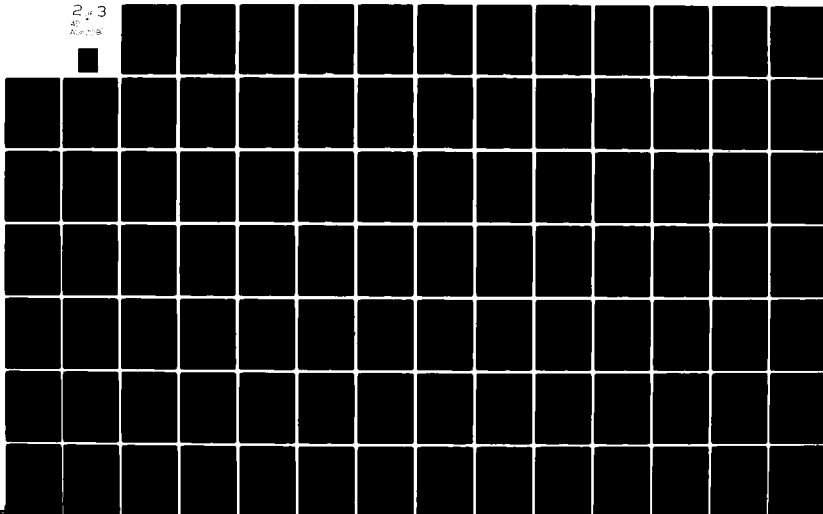
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Conclusion

The results of testing Hypothesis 1 through 8, which are summarized in Table 9, do not provide adequate statistical support to conclude that the attitudes of MCCMs' toward their job and toward the missile operations career field have improved significantly since May 1976. While movement is in the predicted direction in four out of eight hypotheses, only one was found to have improved with a 95 percent statistical confidence. This was the sense of personal accomplishment.

Furthermore, MCCMs' attitudes toward work schedule and their physical working environment was found to be less favorable with 95 percent statistical confidence. In addition, two other factors showed a shift in a less favorable direction, these were attitudes (1) toward their job, and (2) the effect of their job on their personal life.

Although the statistical analysis of the total four year period shows movement in the positive direction in four out of the eight hypotheses, the total picture is not evident until the results of the Engel and O'Neill survey have been analyzed against the current results. This is summarized in Table 10. The data from this last two-year period shows that none of hypothesis tested have improved. In fact, in all eight the attitudes were found to be less favorable, two with a 95 percent confidence level. These

Table 9

PROPOSITION 1: HYPOTHESIS TEST RESULTS
ASHBAUGH & GODFREY SURVEY TO CURRENT
(1976 to 1980)

Hypothesis Number	Question Number	Movement*	Signifi- cance**	Support Proposition
1	17	-	-	No
2	18	+	+	Yes
3	19	+	-	No
4	20	+	-	No
5	21	-	+	No
6	22	-	+	No
7	23	-	-	No
8	24	+	-	No

* + means movement in the predicted direction, and
- means movement not in the predicted direction.

** + means statistically significant,
- means not statistically significant.

TABLE 10

PROPOSITION 1: HYPOTHESIS TEST RESULTS
 ENGEL & O'NEILL TO CURRENT SURVEY
 (1978 to 1980)

Hypothesis Number	Question Number	Movement*	Signifi- cance**	Support Proposition
1	17	-	+	No
2	18	-	-	No
3	19	-	-	No
4	20	-	-	No
5	21	-	-	No
6	22	-	+	No
7	23	-	-	No
8	24	-	-	No

* + means movement in the predicted direction, and
 - means movement not in the predicted direction.

** + means statistically significant,
 - means not statistically significant.

were attitude toward (1) their job, and (2) the physical working environment.

Thus the hypotheses that were showing some positive movement between 1976 and 1978 (see Table 11) have now reversed themselves and those that were negative during that time frame have increased their negativity.

Proposition 2 (Hypotheses 9 through 12). The Minuteman Education Program is an incentive in attracting officers into the missile career field.

Hypothesis 9.

A majority of the MCCMs who were volunteers for missile crew duty report that the opportunity of obtaining a master's degree through the MMEP was a significant influence in their decision to volunteer.

1. Survey question 25. The possibility of attaining a master's degree through the MMEP was a major consideration in my decision to volunteer for MCCM duty.

- a. Strongly agree
- b. Agree
- c. Neutral
- d. Disagree
- e. Strongly disagree
- f. N/A: did not volunteer

Table 11

PROPOSITION 1: HYPOTHESIS TEST RESULTS
ASHBAUGH & GODFREY TO ENGEL & O'NEILL
(1976 to 1978)

Hypothesis Number	Question Number	Movement*	Signifi- cance**	Support Proposition
1	17	+	-	No
2	18	+	+	Yes
3	19	+	+	Yes
4	20	+	+	Yes
5	21	-	+	No
6	22	-	-	No
7	23	-	-	No
8	24	+	-	No

* + means movement in the predicted direction, and
- means movement not in the predicted direction.

** + means statistically significant,
- means not statistically significant.

2. Findings (Tables 12, 13 and 14)

- a. Majority: Affirmative
- b. Significance: Statistically significant
- c. Support: Offers practical support

Table 12

DECISION TO VOLUNTEER
(χ^2 One Sample Test)

Data Source	Favorable	Unfavorable
	A & B	C, D, & E
Current Responses (N = 256)	175	81

Computed χ^2 Statistic = 34.5156; p < .0005

3. Comments: Of the current respondents, 68 percent of the volunteers indicated that the MMEP was a major consideration in their decision to volunteer for MCCM duty. This is almost identical to Engel and O'Neill's survey, which reported 69 percent of the volunteers indicated the MMEP to be a major consideration.

When the crew position was compared with this question, 75 percent of the DMCCCs who volunteered felt that MMEP was a major consideration in their decision to volunteer; whereas, only 55 percent of the MCCC's held the same opinion.

Table 13
DECISION TO VOLUNTEER
(Questionnaire Data)

Response (N = 278)	Number of Respondents	Percentage of Respondents
a. Strongly agree	106	38.1
b. Agree	69	24.8
c. Neutral	28	10.0
d. Disagree	17	6.1
e. Strongly disagree	36	12.9
f. N/A: Did not volunteer	22	7.9

Table 14
DECISION TO VOLUNTEER
(Mann-Whitney Rank Sum Test)

Data Source	Favorable		Unfavorable		
	A	B	C	D	E
E & O (N=225)	94	57	22	21	31
Current Responses (N=256)	106	69	28	17	36

E & O to Current $z_0 = .116$ z_c (one tailed test) = 1.645
 $.4522 < p < .4562$

Additionally the crew members attitudes varied according to rank. Seventy-six percent of the second lieutenants, 71 percent of the first lieutenants, 45 percent of the captains, and none of the majors felt the MMEP was a major consideration in their decision to volunteer for MCCM duty.

Eight-four percent of the graduates of, or participants in, the MMEP felt that the possibility of attaining master's degrees through the MMEP was a major consideration in their volunteering for crew duty. Additionally, 70 percent of the crew members planning to participate, 58 percent considering participation, and 27 percent not intending to participate subscribed to the proposition that the possibility of attaining a master's degree was a major consideration in their decision to volunteer.

Hypothesis 10.

A majority of the MCCMs, who have graduated from or are participating in the MMEP, believe that the MMEP is one of the most positive aspects of their missile crew duty.

1. Survey question 50. The MMEP is one of the most positive aspects of my missile crew duty assignment.

- a. Strongly agree
- b. Agree

- c. Neutral
- d. Disagree
- e. Strongly disagree

2. Findings (Tables 15, 16, and 17)

- a. Majority: Affirmative
- b. Significance: Statistically significant
- c. Support: Does offer practical support

3. Comments: In 1978, 83 percent of the MCCMs indicated that the MMEP was one of the most positive aspects of missile crew duty. However, in the current study an additional 2 percent, 85 percent, held the same opinion.

Table 15

MMEP AS POSITIVE ASPECT
(χ^2 One Sample Test)

Data Source	Agree A & B	Other C, D, & E
Current Responses (N = 157)	133	24

Computed χ^2 Statistic = 75.6751; $p < .0005$

Table 16

MMEP AS POSITIVE ASPECT
(Questionnaire Data)

Response	Number of Respondents	Percentage of Respondents
Strongly agree	67	42.7
Agree	66	42.0
Neutral	16	10.2
Disagree	7	4.5
Strongly disagree	1	.6

Table 17

MMEP AS POSITIVE ASPECT
(Mann-Whitney Rank Sum Test)

Data Source	Agree			Disagree	
	A	B	C	D	E
A & O (N = 117)	63	34	11	8	1
All Current Responses: (N = 157)	67	66	16	7	1

E & O to Current $z_0 = -1.253$
 z_c (two tailed test) = -1.960
 $.2112 < p < .2076$

It should be noted that in the current study there was a shift in attitude away from the strong agreement response toward the agree and neutral responses. In the Engel and O'Neill study, 54 percent of the participants strongly agreed; whereas, in the current study only 43 percent strongly agreed. The shift is illustrated in the Mann-Whitney Rank Sum Test (See Table 17) which indicates that the responses are moving in reverse of the predicted direction; however, the movement was not large enough to be statistically significant.

Hypothesis 11.

A majority of the MCCMs believe that the MMEP is a significant career benefit of missile crew duty.

1. Survey question 26: Do you consider the MMEP to be a significant career benefit of missile duty?

- a. Yes, significant benefit
- b. Yes, some benefit
- c. No benefit

2. Findings (Tables 18 and 19)

- a. Majority: Affirmative
- b. Significance: Not statistically significant
- c. Support: Does not offer practical support

Table 18
CAREER BENEFIT
(χ^2 One Sample Test)

Data Source	Significant Benefit - A	Other B & C
All Current Responses (N = 278)	155	123
Computed χ^2 Statistic = 3.68; .05 < p < .10		

Table 19
CAREER BENEFIT
(Mann-Whitney Rank Sum Test)

Data Source	Significant Benefit	Some Benefit	No Benefit
A & G (N = 230)	144	69	17
E & O (N = 264)	142	96	26
Current Responses: (N = 278)	155	100	23

A & G to E & O	$Z_0 = -1.989$ Z_C (two tailed test) = -1.960 p = .0466
E & O to Current	$Z_0 = 0.568$ Z_C (one tailed test) = 1.645 .2843 < p < .2877
A & G to Current	$Z_0 = -1.488$ Z_C (two tailed test) = -1.960 .1362 < p < .1388

3. Comments. Fifty-five percent of the crew members surveyed indicated that the MMEP was a significant benefit of missile duty with another 36 percent saying that it was of some benefit. This compared favorably with the results obtained by Engel and O'Neill but not with Ashbaugh and Godfrey. Engel and O'Neill reported that 54 percent of the crew members felt the MMEP to be a significant benefit with an additional 36 percent stating it was of some benefit. Ashbaugh and Godfrey's results indicated 63 percent felt it a significant career benefit with another 30 percent indicating it was of some benefit.

The Mann-Whitney test shows that there was no significant deviation in the attitudes of the crew members during the period 1976 to the current study. However, it is evident that a significant decline in the attitudes of the crew members occurred between the Ashbaugh and Godfrey study in 1976 and the Engel and O'Neill study in 1978. However, this trend reversed itself from 1978 to the current study.

With respect to grade, the percentages of officers considering MMEP a significant career benefit are: 61 percent second lieutenants; 57 percent first lieutenants; 54 percent captains; and 20 percent majors. This compares with Engel and O'Neill's findings that 66 percent of the second lieutenants; 46 percent of the first lieutenants; 54 percent of the captains; and 50 percent of the majors

considered the MMEP significant career benefit. However, when consideration was given to include the response that the MMEP was of some benefit the percentages increased dramatically in the current study. Ninety-seven percent of the second lieutenants, 91 percent of the first lieutenants, 89 percent of the captains, and 80 percent of the majors responded affirmatively. This corresponds favorably with the Engel and O'Neill conclusions.

Hypothesis 12.

A majority of the MCCMs who participate in the MMEP believe that missile crew duty would be a waste of valuable career time without the MMEP.

1. Survey Question 49. Without the MMEP, missile duty would be a waste of valuable career time.
 - a. Strongly agree
 - b. Agree
 - c. Neutral
 - d. Disagree
 - e. Strongly disagree
2. Findings (Tables 20, 21, and 22)
 - a. Majority: Affirmative
 - b. Significance: Not statistically significant
 - c. Support: Does not offer practical support

Table 20

WASTED CAREER TIME
(χ^2 One Sample Test)

Data Source	Favorable A & B	Other C, D, & E
Current Responses (N = 157)	88	69

Computed χ^2 Statistic = 2.2994; .10 < p < .25

Table 21

WASTED CAREER TIME
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
Strongly agree	44	28.0
Agree	44	28.0
Neutral	21	13.4
Disagree	31	19.8
Strongly disagree	17	10.8

Table 22
WASTED CAREER TIME
(Mann-Whitney Rank Sum Test)

Data Source	Agree			Disagree	
	A	B	C	D	E
E & O (N = 117)	31	26	28	30	3
All Current Responses:					
(N = 157)	44	44	21	31	17
E & O to Current	$Z_0 = .116$				
	Z_C (one tailed test) = 1.645				
	$.4562 < p < .4522$				

3. Comment: This question was only answered by graduates and participants in the MMEP. The Mann-Whitney Rank Sum Test showed movement in the predicted direction but the movement was not statistically significant (see Table 22). In 1978 only 48 percent of the participating MCCMs felt that crew duty would be a waste of valuable time without the MMEP; whereas, in the current study 56 percent of the crew members held this opinion.

Conclusion

The results of testing hypothesis 9 through 12, which are summarized in Table 23, provides adequate statistical support to conclude that the Minuteman Education

Table 23

PROPOSITION 2: HYPOTHESIS TEST RESULTS
CURRENT SURVEY
(χ^2 One Sample Test)

Hypothesis Number	Question Number	Majority Favorable	Significance**	Support Proposition
9	25	Yes	+	Yes
10	50	Yes	+	Yes
11	26	Yes	-	No
12	49	Yes	-	No

** + means statistically significant
- means not statistically significant

Program is an incentive in attracting officers into the missile career field. The majority of respondents answered affirmatively on all four hypothesis test questions with two attaining a statistical significance at the 95 percent confidence level, utilizing the χ^2 One-Sample Test. The percentage of affirmative answers varied from 55 percent on question 26 to 83 percent on survey question 50. When the current responses are compared with the responses from the Engel and O'Neill study, which are summarized in Table 24, improvements are noted in three of the four hypothesis. These were (1) The possibility of attaining a master's degree through the MMEP being a major consideration in volunteering for MCCM duty, (2) belief that the MMEP is a

Table 24

PROPOSITION 2: HYPOTHESIS TEST RESULTS
ENGEL AND O'NEILL TO CURRENT
(1978 to 1980)
(Mann-Whitney Rank Sum Test)

Hypothesis Number	Question Number	Movement*	Signifi- cance**	Support Proposition
9	25	+	-	No
10	50	-	-	No
11	26	+	-	No
12	49	+	-	No

* + means movement in the predicted direction, and
- means movement not in the predicted direction.

** + means statistically significant,
- means not statistically significant

significant career benefit, and (3) the belief that missile crew duty would be a waste of valuable career time without the MMEP. However, the improvements were not of the extent that they attained statistical significance. The one area that declined was the belief that the MMEP is one of the most positive aspects of their missile crew duty assignment. Again, this decline was not statistically significant at the 95 percent confidence level.

Proposition 3 (Hypotheses 13 through 28). The current MCCMs have a favorable attitude toward the MMEP.

Hypothesis 13.

The change in the Veterans' Administration benefits authorization has led to a more favorable attitude toward the MMEP.

1. Survey question 27. Do you feel that the change (reduction) in the G.I. Bill educational benefits has enhanced the attractiveness of the MMEP when compared to alternate graduate degree programs?

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided
- d. A qualified no
- e. A definite no

2. Findings (Tables 25 and 26)

- a. Majority: Affirmative
- b. Significance: Statistically significant
- c. Support: Offers practical support

3. Comments: Fifty-seven percent of the crew members felt that the reduction in the G.I. Bill educational benefits had enhanced the attractiveness of the MMEP when compared to alternate graduate programs.

The responses varied by base. Only 47 percent of the crew members at Minot felt that the reduction in the G.I. Bill benefits had enhanced the MMEP. This compares

Table 25
VETERANS ADMINISTRATION BENEFITS
(χ^2 One Sample Test)

Data Source	Favorable A & B	Unfavorable C, D, & E
Current Responses (N = 278)	159	119
Computed χ^2 Statistic = 5.7554; .01 < p < .025		

Table 26
VETERANS ADMINISTRATION BENEFITS
(Questionnaire Data)

Questionnaire Responses N = 278	Number of Respondents	Percentage of Respondents
A definite yes	84	30.2
A qualified yes	75	27.0
Neutral/undecided	69	24.8
A qualified no	28	10.1
A definite no	22	7.9

to 55 percent at Ellsworth and Malmstrom, 62 percent at Grand Forks, 63 percent at F. E. Warren and 67 percent at Whiteman.

Sixty percent of the lieutenants, 53 percent of the captains, and 30 percent of the majors felt that the reduction in the G.I. Bill enhanced the MMEP. Of the graduates or those presently enrolled 65 percent believe that the reduction enhanced the MMEP. Additionally, 60 percent of those who plan to participate and 63 percent of the crew members considering participation held the same opinion; whereas, only 42 percent of those who did not intend to participate held this viewpoint.

Hypothesis 14.

The majority of the MCCMs graduated from or enrolled in the MMEP would have enrolled in the MMEP rather than one of the locally available off-duty graduate education programs even if the costs involved were the same.

1. Survey question 54. If it were not for the cost involved, would you have preferred to be enrolled in one of the locally available off-duty graduate education programs rather than in the MMEP?

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided
- d. A qualified no
- e. A definite no

2. Findings (Tables 27 and 28)

- a. Majority: Affirmative
- b. Significance: Statistically significant
- c. Support: Offers practical support

Table 27

PREFERRED TO ENROLL IN OTHER DEGREE PROGRAMS
IF IT WERE NOT FOR COST
(χ^2 One Sample Test)

Data Source	Favorable	Unfavorable
	D & E	A, B, & C
Current Responses (N = 157)	95	62

Computed χ^2 Statistic = 6.9362; .005 < p < .010

Table 28

PREFERRED TO ENROLL IN OTHER DEGREE PROGRAMS
IF IT WERE NOT FOR COST
(Questionnaire Data)

Response	Number of Respondents	Percentage of Respondents
a. A definite yes	13	8.2
b. A qualified yes	19	12.1
c. Neutral/undecided	30	19.1
d. A qualified no	49	31.2
e. A definite no	46	29.2

3. Comments: Twenty percent of the graduates or those participating in the MMEP would have preferred enrollment in one of the locally available off-duty graduate education programs if it were not for the cost involved. However, 60 percent would prefer the MMEP regardless of cost.

Hypothesis 15.

A majority of MCCMs, currently enrolled in or graduated from the MMEP would have enrolled in one of the graduate degree programs offered by other schools on base had the MMEP not been available.

1. Survey question 52. If the MMEP was not available to you would you have enrolled in one of the other graduate programs being offered?

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided
- d. A qualified no
- e. A definite no

2. Findings (Tables 29 and 30)

- a. Majority: Affirmative
- b. Significance: Statistically significant
- c. Support: Offers practical support

3. Comments: As can be clearly seen the majority of these crew members would have enrolled in other graduate degree programs had the MMEP not been offered. The

Table 29
ENROLL IN OTHER GRADUATE PROGRAMS
(χ^2 One Sample Test)

Data Source	Favorable A & B	Other C, D, & E
Current Responses (N = 278)	124	33
Computed χ^2 Statistic = 52.7452; p < .0005		

Table 30
ENROLL IN OTHER GRADUATE PROGRAMS
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
a. A definite yes	74	47.1
b. A qualified yes	50	31.8
c. Neutral/undecided	19	12.1
d. A qualified no	8	5.1
e. A definite no	6	3.9

results are statistically significant and offer support for the proposition, since these crew members chose the MMEP over alternative programs.

The importance of a master's degree seems well ingrained in the crew force as a whole. Seventy-seven percent of the second lieutenants, 93 percent of the first lieutenants, 81 percent of the captains, and 50 percent of the majors would have enrolled in another graduate program if the MMEP was not available.

Hypothesis 16.

The majority of MCCMs graduated from or enrolled in the MMEP would have enrolled in the MMEP rather than one of the locally available off-duty graduate education programs even if their duty schedule had been built around the latter as it was with the MMEP.

1. Survey question 57. Would you have preferred to attend an alternative graduate program offered on base by one of the other schools if your duty schedule had been built around class attendance as it was with MMEP?

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided
- d. A qualified no
- e. A definite no

2. Findings (Tables 31 and 32)

- a. Majority: Disagree
- b. Significance: Not statistically significant
- c. Support: Does not offer practical support

Table 31

PREFERRED TO ENROLL IN OTHER GRADUATE PROGRAMS
IF CONSIDERATION GIVEN TO DUTY SCHEDULE
(χ^2 One Sample Test)

Data Source	Favorable D & E	Other A, B, & C
Current Responses (N = 157)	76	81

Computed χ^2 Statistic = 0.1592; .50 < p < .75

Table 32

PREFERRED TO ENROLL IN OTHER DEGREE PROGRAMS
IF CONSIDERATION GIVEN TO DUTY SCHEDULE
(Questionnaire Data)

Response	Number of Respondents	Percentage of Respondents
a. A definite yes	21	13.3
b. A qualified yes	19	12.1
c. Neutral/undecided	41	26.1
d. A qualified no	36	22.9
e. A definite no	40	25.4

3. Comments: Twenty-five percent of the MCCMs that have graduated or are participating in the MMEP said that they would have enrolled in an alternative graduate program if their duty schedule had been built around class attendance. Forty-eight percent answered negatively and 26 percent were undecided.

Hypothesis 17.

The majority of MCCMs feel that the AFIT/MMEP is academically more difficult than locally available off-duty graduate education programs.

1. Survey question 32. Do you feel that the AFIT/MMEP is academically more difficult (rigorous) than other locally available off-duty graduate education programs?

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided
- d. A qualified no
- e. A definite no

2. Findings (Tables 33 and 34)

- a. Majority: Disagree
- b. Significance: Not statistically significant
- c. Support: Does not offer practical support

3. Comments: Although no statistical significance was obtained when the survey responses were broken out into

Table 33

AFIT/MMEP ACADEMICALLY MORE DIFFICULT
(χ^2 One Sample Test)

Data Source	Favorable A & B	Unfavorable C, D, & E
Current Responses (N = 278)	127	151
Computed χ^2 Statistic = 2.0719; .10 < p < .25		

Table 34

AFIT/MMEP ACADEMICALLY MORE DIFFICULT
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
a. A definite yes	66	23.8
b. A qualified yes	61	21.9
c. Neutral/undecided	91	32.7
d. A qualified no	35	12.6
e. A definite no	25	9.0

only two groups, those favorable and other, 45 percent of the crew members felt that the MMEP program is academically more difficult than the locally available off-duty graduate education programs; whereas, 22 percent answered negatively and 33 percent were neutral or undecided.

The responses to this question varied by base of assignment. Fifty-nine percent of the crew members at Ellsworth thought the MMEP to be academically more difficult. However, this percentage declined at the other bases with 51 percent of the crew members at Minot, 49 percent of the crew members at Whiteman, 47 percent of the MCCMs at F. E. Warren, 36 percent of the MCCMs at Malmstrom, and 21 percent of the MCCMs at Grand Forks holding the same opinion.

The crew members who had some graduate education but no graduate degree perceived the MMEP to be more academically difficult than other locally available off-duty graduate education. This was supported by the fact that 55 percent of the crew members with a bachelors degree and some graduate work held this opinion; whereas, only 34 percent of those with a bachelors and masters degree and 20 percent of those holding more than one masters degree felt the MMEP to be academically more difficult.

Hypothesis 18.

The majority of the MCCMs believe that the amount and content of the MMEP prerequisite courses are appropriate.

1. Survey question 36. From what you know, do you believe that the amount and content of the Minuteman Education Program prerequisite courses are appropriate?
 - a. A definite yes
 - b. A qualified yes
 - c. Neutral/undecided
 - d. A qualified no
 - e. A definite no
2. Findings (Tables 35 and 36)
 - a. Majority: Affirmative
 - b. Significance: Not statistically significant
 - c. Support: Does not offer practical support
3. Comments: Fifty-five percent of the MCCMs believe that the amount and content of the MMEP prerequisite courses are appropriate. Whereas, 15 percent feel that they are inappropriate and 30 percent are undecided.

The responses seemed to vary by base with Malmstrom being the worst with only 42 percent of the crew members believing the prerequisite courses were appropriate and Ellsworth the best with 60 percent of the crew members believing the prerequisite courses were appropriate. The

Table 35

MINUTEMAN EDUCATION PROGRAM PREREQUISITES
(χ^2 One Sample Test)

Data Source	Favorable A & B	Unfavorable C, D, & E
Current Responses (N = 278)	153	125

Computed χ^2 Statistic = 2.82; .05 < p < .10

Table 36

MINUTEMAN EDUCATION PROGRAM PREREQUISITES
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
a. A definite yes	51	18.3
b. A qualified yes	102	36.7
c. Neutral/undecided	82	29.5
d. A qualified no	24	8.6
e. A definite no	19	6.8

four remaining bases were fairly consistent around the 55 percent level.

Hypothesis 19.

The majority of the MCCMs prefer a graduate level management degree program which requires prerequisite courses similar to those currently required by the MBA program offered by the MMEP.

1. Survey question 41. Would you prefer a graduate level management degree program which did not require any of the prerequisite courses currently required by the MBA program offered by the MMEP?

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided
- d. A qualified no
- e. A definite no

2. Findings (Table 37)

- a. Majority: Disagree
- b. Significance: Statistically significant
- c. Support: Does not offer practical support

3. Comments: Forty-one percent of the MCCMs said they would prefer a graduate level management degree program which did not require any of the prerequisite courses currently required for the MBA program offered by the MMEP.

Table 37

PREFER MANAGEMENT DEGREE WITHOUT PREREQUISITES
(χ^2 One Sample Test)

Data Source	Favorable	Unfavorable
	D & E	A, B, & C
Current Responses (N = 278)	86	192

Computed χ^2 Statistic = 40.4173; $p < .0005$

Twenty-nine percent of the MCCMs that were enrolled felt they would have preferred a graduate level management degree program which did not require any of the prerequisite courses. This percentage increased drastically for those who planned on participating or who were considering participation. The percentages for these two groups were 45 percent for those planning to participate and 68 percent for those considering participation.

Hypothesis 20.

A majority of MCCMs enrolled in or graduated from the MMEP feel that participation in the MMEP improves their duty performance as missile combat crew members.

1. Survey question 55. Do you feel that participation in the MMEP improves your duty performance as a MCCM?

- a. A definite yes
 - b. A qualified yes
 - c. Neutral/undecided
 - d. A qualified no
 - e. A definite no
2. Findings (Tables 38, 39 and 40)
- a. Majority: disagree
 - b. Significance: Not statistically significant
 - c. Support: Does not offer practical support

Table 38

MMEP IMPROVES DUTY PERFORMANCE
(χ^2 One Sample Test)

Data Source	Favorable	Unfavorable
	A & B	C, D, & E
Current Responses (N = 157)	70	87

Computed χ^2 Statistic = 1.8408; .10 < p < .25

3. Comments: Forty-five percent of the crew members felt that participation in the MMEP improved duty performance. Neutral or undecided responses accounted for 19 percent and 36 percent of the crew members did not believe that the MMEP improved their duty performance. The Mann-Whitney Rank Sum Test points to a downward trend in attitudes toward the MMEP as improving duty performance

Table 39

MMEP IMPROVES DUTY PERFORMANCE
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
a. A definite yes	22	14.0
b. A qualified yes	48	30.6
c. Neutral/undecided	30	19.1
d. A qualified no	35	22.3
e. A definite no	22	14.0

Table 40

MMEP IMPROVES DUTY PERFORMANCE
(Mann-Whitney Rank Sum Test)

Data Source	Favorable			Unfavorable	
	A	B	C	D	E
E & O (N = 118)	25	35	20	23	15
Current Responses:					
(N = 156)	22	48	29	35	22

E & O to Current

$$Z_0 = -1.224$$

$$Z_C \text{ (two tailed test)} = -1.960$$

$$.2186 < p < .2224$$

since the Engel and O'Neill study but this was not statistically significant.

The responses varied by base from a low of 18 percent at Grand Forks to a high of 55 percent of Minot. The remainder of the bases fell into this range with Whiteman at 54 percent, Malmstrom at 50 percent, F. E. Warren at 47 percent, and Ellsworth at 45 percent.

Thirty percent of the second lieutenants felt that the MMEP improved their performance as a MCCM; whereas, 51 percent of the first lieutenants, 40 percent of the captains, and 100 percent of the majors were of this opinion.

Hypothesis 21.

The majority of MCCMs feel that an advanced degree from the MMEP would enhance their performance in future Air Force assignments more than an advanced degree obtained from other schools offering graduate programs on base.

1. Survey question 31. Do you feel that an advanced degree from the MMEP will enhance your performance in future Air Force assignments more than would an advanced degree from other schools offering graduate programs on base?

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided

- d. A qualified no
- e. A definite no
- 2. Findings (Tables 41 and 42)
 - a. Majority: Disagree
 - b. Significance: Statistically significant
 - c. Support: Does not offer practical support

Table 41

MMEP DEGREE ENHANCES PERFORMANCE
(χ^2 One Sample Test)

Data Source	Favorable	Unfavorable
	A & B	C, D, & E
Current Responses (N = 278)	80	198

Computed χ^2 Statistic = 50.0863; p < .0005

Comments: Only 29 percent of the crew members feel that an advanced degree from the MMEP will enhance their performance in future Air Force assignments more than an advanced degree from another school offering graduate programs on base. Another 27 percent of the crew members are undecided; however, 44 percent are of the opinion that the advanced degree from the MMEP will not enhance their performance in future Air Force assignments more than an advanced degree from other schools offering graduate programs on base.

Table 42

MMEP DEGREE ENHANCES PERFORMANCE
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
a. A definite yes	33	11.9
b. A qualified yes	47	16.9
c. Neutral/undecided	76	27.3
d. A qualified no	54	19.4
e. A definite no	68	24.5

The crew members that were graduates of or participants in the MMEP felt that the MMEP degree would enhance their performance in future assignments more than those who planned to participate, those that were considering participation or those that did not intend to participate. The percentages were as follows: 42 percent for graduates and participants, 35 percent for those planning participation, 21 percent for those considering participation, and only 5 percent for those crew members who did not intend to participate.

Hypothesis 22.

The majority of MCCMs feel that the Air Force of the future will have a greater need for the officers with the type of graduate education provided by the MMEP than

for officers with the type of education provided by other schools offering graduate programs on base.

1. Survey Question 30. Do you feel that in the future there will be a greater Air Force need for officers possessing the type of graduate education provided by the MMEP than for officers with the type of graduate education provided by other schools offering graduate programs on base?

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided
- d. A qualified no
- e. A definite no

2. Findings (Tables 43 and 44)

- a. Majority: Disagree
- b. Significance: Statistically significant
- c. Support: Does not offer practical support

3. Comments: Twenty-seven percent of the crew members felt that there will be a greater need in the future for Air Force officers possessing the type of graduate education provided by the MMEP rather than a graduate degree presently offered by other graduate programs on base. However, 46 percent of the MCCMS held the opposite opinion and 26 percent were neutral or undecided. The responses varied by base. Fifty-six percent of the MCCMS at Minot did not feel that the Air Force will have a

Table 43

NEED FOR OFFICERS POSSESSING THE MMEP DEGREE
(χ^2 One Sample Test)

Data Source	Favorable	Unfavorable
	A & B	C, D, & E
Current Responses (N = 278)	75	205
Computed χ^2 Statistic = 78.5395; p < .0005		

Table 44

NEED FOR OFFICERS POSSESSING THE MMEP DEGREE
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
A definite yes	26	9.4
A qualified yes	49	17.6
Neutral/undecided	76	27.3
A qualified no	63	22.7
A definite no	64	23.0

greater need for officers possessing the MMEP degree than another graduate degree presently offered on base. This percentage declined for the other bases involved. They were: Malmstrom 52 percent, Ellsworth 50 percent, F. E. Warren 39 percent, and 36 percent for Whiteman and Grand Forks.

Hypothesis 23.

The majority of MCCMS feel that possession of an advanced degree from the MMEP enhances their promotion opportunity more than an advanced degree from other schools offering graduate programs on base.

1. Survey Question 29. Do you feel that the possession of an advanced degree from the MMEP enhances an officer's promotion opportunity more than an advanced degree from other schools of offering graduate programs on base?

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided
- d. A qualified no
- e. A definite no

2. Findings (Tables 45 and 46)

- a. Majority: Disagree
- b. Significance: Statistically significant
- c. Support: Does not offer practical support

Table 45

MMEP ENHANCES PROMOTION MORE THAN OTHER PROGRAMS
(χ^2 One Sample Test)

Data Source	Favorable	Unfavorable
	A & B	C, D, & E
Current Responses (N = 278)	58	220

Computed χ^2 Statistic = 94.4029; $p < .0005$

Table 46

MMEP ENHANCES PROMOTION MORE THAN OTHER PROGRAMS
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
a. A definite yes	20	7.2
b. A qualified yes	38	13.7
c. Neutral/undecided	85	30.5
d. A qualified no	55	19.8
e. A definite no	80	28.8

3. Comments: Forty-nine percent of crew members did not feel that the possession of an advanced degree from the MMEP enhanced their promotion opportunity more than an advanced degree from other schools offering graduate programs on base.

As the crew members grade increased the perception of the MMEP degree being an enhancement to promotion decreased. Forty-two percent of the lieutenants responded negatively; whereas, 56 percent of the captains, and 60 percent of the majors did not believe that the possession of an MMEP degree enhanced promotion opportunity more than another advanced degree.

Fifty-three percent of the crew members who intended to make the Air Force a career did not believe that the MMEP degree enhanced promotion opportunities. Whereas, 16 percent of those who did not intend to make the Air Force a career believed that it did enhance promotion opportunities.

Hypothesis 24.

A majority of MCCMS feel that their supervisors encourage participation in the MMEP.

1. Survey Question 33. Did your supervisors encourage you to participate in the MMEP?

- a. A definite yes
- b. A qualified yes

- c. Neutral/undecided
 - d. A qualified no
 - e. A definite no
2. Findings (Tables 47, 48 and 49)
- a. Majority: Affirmative
 - b. Significance: Statistically significant
 - c. Support: Offers practical support

Table 47
SUPERVISORS ENCOURAGE PARTICIPATION
(χ^2 One Sample Test)

Data Source	Favorable A & B	Unfavorable C, D, & E
Current Responses	162	116

Computed χ^2 Statistic = 7.6115; .005 < p < .01

3. Comments: The responses indicate that a clear majority of the crew members felt their supervisors encouraged them to enroll in the MMEP.

The Mann-Whitney test pointed to a downward trend in the perceptions of the crew members regarding supervisor encouragement since the completion of the Engel and O'Neill study in 1976. However, this trend was not significant (see Table 49).

The responses varied by the base of assignment. Only 40 percent of the crew members at Ellsworth felt that

Table 48

ENROLL IN OTHER GRADUATE PROGRAMS
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
a. A definite yes	58	20.9
b. A qualified yes	104	37.4
c. Neutral/undecided	42	15.1
d. A qualified no	44	15.8
e. A definite no	30	10.8

Table 49

SUPERVISORS ENCOURAGE PARTICIPATION
(Mann-Whitney Rank Sum Test)

Data Source	Affirmative			Negative	
	A	B	C	D	E
E & O Responses (N = 265)	67	86	71	24	17
Current Responses (N=278)	58	104	42	44	30

E & O to Current

$$z_0 = -1.441$$

$$z_c \text{ (two-tailed test) } = -1.960$$

$$.1470 < p < .1498$$

their supervisors encourage participation in the MMEP. This compares to 53 percent at F.E. Warren, 61 percent at Malmstrom and Minot, 62 percent at Grand Forks and 77 percent at Whiteman.

Apparently the more a supervisor encourages participation in the MMEP the stronger the MCCMs desire to enter the program. The results showed that 64 percent of those who had graduated or who were currently enrolled in the program felt that their supervisors had encouraged them to enroll in the MMEP, whereas, 70 percent of those who planned to enroll, 53 percent of those who were considering enrolling, and 46 percent of the crew members who had no intention of enrolling felt that their supervisors encouraged participation in the MMEP.

Hypothesis 25.

A majority of MCCMs feel that the local AFIT commander actively promotes enrollment in the MMEP.

1. Survey Question 34. Does the local AFIT/MMEP detachment commander actively promote enrollment in the MMEP?

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided
- d. A qualified no
- e. A definite no

2. Findings (Tables 50, 51, and 52)

- a. Majority: Affirmative
- b. Significance: Not Statistically significant
- c. Support: Does not offer practical support

Table 50

DETACHMENT COMMANDER PROMOTES MMEP
(χ^2 One Sample Test)

Data Source	Favorable	Unfavorable
	A & B	C, D, & E
Current Responses (N=278)	150	128

Computed χ^2 Statistic = 1.7410; .10 < p < .25

3. Comments: Although no statistical significance was obtained when the survey responses were dicotomized into two groups, those favorable and other, 54 percent of the crew members believe that the local AFIT detachment commander promoted enrollment in the MMEP. However, there was a downward shift in the attitudes of the crew members since the completion of the Engel and O'Neill study in 1976 (see Table 52) and this change is very close to being statistically significant.

The responses varied by base. Only 21 percent of the crew members at Grand Forks were of the opinion that the local detachment commander actively promoted enrollment

Table 51

DETACHMENT COMMANDER PROMOTES MMEP
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
a. A definite yes	64	23.1
b. A qualified yes	86	30.9
c. Neutral/undecided	70	25.2
d. A qualified no	34	12.2
e. A definite no	24	8.6

Table 52

DETACHMENT COMMANDER PROMOTES MMEP
(Mann-Whitney Rank Sum Test)

Data Source	Favorable			Unfavorable	
	A	B	C	D	E
E & O Responses (N = 265)	77	75	82	23	8
All Current Responses (N=278)	64	86	70	34	24

E & O to Current

$$Z_0 = -1.917$$

$$Z_C \text{ (two-tailed test)} = -1.960$$

$$.0548 < p < .0562$$

in the MMEP. This corresponded with 55 percent at Ellsworth, 57 percent at F. E. Warren, 59 percent at Whiteman, 61 percent at Malmstrom.

A steady decline was noted in percentage rates when grade was compared to this question. Of the second lieutenants, 62 percent felt that the detachment commander was actively promoting MMEP. Fifty-five percent of the first lieutenants, 43 percent of the captains and 40 percent of the majors agreed with the opinion of the second lieutenants.

Hypothesis 26.

A majority of the MCCMs feel that the contracting university's resident director actively promotes enrollment in the MMEP.

1. Survey Question 28. Does the contracting university's resident director actively promote enrollment in the MMEP?

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided
- d. A qualified no
- e. A definite no

2. Findings (Tables 53 and 54)

- a. Majority: Affirmative
- b. Significance: Not statistically significant
- c. Support: Does not offer practical support

Table 53
CONTRACTING UNIVERSITIES RESIDENT DIRECTOR
(χ^2 One Sample Test)

Data Source	Favorable A & B	Other C, D, & E
Current Responses (N = 278)	141	137

Computed χ^2 Statistic = .0575; .75 < p < .90

Table 54
CONTRACTING UNIVERSITIES RESIDENT DIRECTOR
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
a. A definite yes	70	25.2
b. A qualified yes	71	25.5
c. Neutral/undecided	91	32.7
d. A qualified no	29	10.5
e. A definite no	17	6.1

3. Comments: Although statistical significance was not obtained when the survey responses were dicotomized into two groups, those favorable and others, 51 percent of the crew members felt that the contracting universities resident director actively promoted the MMEP, while only 16 percent felt that the resident directors were not promoting enrollment in the MMEP, and 33 percent were undecided.

The responses varied by base. Sixty-nine percent of the crew members at Grand Forks thought the resident director was actively promoting the MMEP. However, this percentage decreased to 56 percent for Whiteman, 52 percent for Minot, 47 percent for Ellsworth, 42 percent for Malmstrom, and 39 percent for F. E. Warren.

A 20 percent variation in the MCCC responses as opposed to the DMCCC responses was noted. Only 42 percent of the DMCCCs felt that the resident director was actually promoting the MMEP; whereas, 62 percent of the MCCCs held the same opinion. Thus the resident director might not be putting as much emphasis on the MMEP now as in the past.

As crew member attitudes toward making the Air Force a career decreased, their perceptions of the degree to which the resident directors promoted the MMEP increased. Only 40 percent of the crew members, who definitely intend to make the Air Force a career, think the resident director

actively promotes the MMEP. Sixty-seven percent of those who definitely intend to leave the Air Force are of the same opinion.

Hypothesis 27.

A majority of MCCMs enrolled in or graduated from the MMEP feel that the local AFIT detachment commander makes every effort possible to help resolve any MMEP related problems they encounter.

1. Survey Question 56. Do you feel that the local AFIT detachment commander makes every effort possible to help resolve any MMEP related problems you encounter?

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided
- d. A qualified no
- e. A definite no

2. Findings (Tables 55, 56, and 57)

- a. Majority: Disagree
- b. Significance: Not statistically significant
- c. Support: Does not offer practical support

3. Comments: Forty-nine percent of the MCCMs enrolled in or graduated from the MMEP felt that the local AFIT detachment commander made every effort to help resolve

Table 55

AFIT DETACHMENT COMMANDER RESOLVES PROBLEMS
(χ^2 One Sample Test)

Data Source	Favorable	Other
	A & B	C, D, & E
Current Responses (N = 158)	77	81

Computed χ^2 Statistic = .1013; .75 < p < .90

Table 56

AFIT DETACHMENT COMMANDER RESOLVES PROBLEMS
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
a. A definite yes	40	25.3
b. A qualified yes	37	23.4
c. Neutral/undecided	48	30.4
d. A qualified no	18	11.4
e. A definite no	15	9.5

Table 57

AFIT DETACHMENT COMMANDER RESOLVING MMEP PROBLEMS
(Mann-Whitney Rank Sum Test)

Data Source	Affirmative			Negative	
	A	B	C	D	E
E & O Responses (N = 118)	58	33	21	4	2
All Current Responses (N=157)	40	37	47	18	15
E & O to Current	$Z_0 = -5.154$ Z_C (two-tailed test) = -1.960 $p < .0001$				

MMEP related problems. Thirty percent were neutral or undecided, while the remaining 21 percent felt that he did not.

The efforts of the detachment commanders seemed to vary from base to base. Seventy-seven percent of the crew members at Whiteman felt that the detachment commander was making every effort possible to help resolve MMEP related problems. However, only 70 percent of the crew members at Malmstrom, 48 percent of the crew members at Ellsworth, 39 percent of the crew members at Minot and Grand Forks, and 37 percent of the crew members at F. E. Warren related the same opinion.

As the grade of the crew members increased their opinion of the MMEP detachment commander's efforts to help resolve problems decreased. Fifty-two percent of the second lieutenants, 48 percent of the first lieutenants, 47 percent of the captains and none of the majors felt that the AFIT detachment commanders were making every effort to help resolve MMEP problems.

Hypothesis 28.

The majority of MCCMs enrolled in or graduated from the MMEP feel that the contracting university's resident director makes every effort possible to help resolve any MMEP related problems they encounter.

1. Survey question 53. Do you feel that resident directors of the MMEP effectively seek out and solve problems their students encounter?

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided
- d. A qualified no
- e. A definite no

2. Findings (Tables 58 and 59)

- a. Majority: Affirmative
- b. Significance: Statistically significant
- c. Support: Offers practical support

Table 58

CONTRACTING UNIVERSITIES RESIDENT DIRECTOR
(χ^2 One Sample Test)

Data Source	Favorable A & B	Other C, D, & E
Current Responses (N = 157)	91	66

Computed χ^2 Statistic = 3.9809; .025 < p < .05

Table 59

CONTRACTING UNIVERSITIES RESIDENT DIRECTOR
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
a. A definite yes	35	22.3
b. A qualified yes	56	35.7
c. Neutral/undecided	34	21.7
d. A qualified no	29	14.6
e. A definite no	9	5.7

3. Comments: Fifty-eight percent of the crew members enrolled in or graduated from the MMEP indicated that the contracting university's resident director effectively seeks out and helps solve the problems that students encounter.

The responses varied by base of assignment. Forty-eight percent of the participants at Ellsworth thought the resident director made every effort possible to help resolve student problems; whereas, 50 percent of the crew members at F. E. Warren, 52 percent of the crew members at Minot, 60 percent of the crew members at Malmstrom, 64 percent of the crew members at Grand Forks, and 77 percent of the crew members at Whiteman were of the same opinion.

By grade, 54 percent of the second lieutenants, 64 percent of the first lieutenants, 53 percent of the captains, and none of the majors felt that the resident directors were effectively seeking out and solving student problems.

Conclusion

The results of testing hypothesis 13 through 28, which are summarized in Table 60, do not provide adequate statistical support to conclude that the current MCCMS have a favorable attitude toward the MMEP. While a clear majority answered affirmatively in eight of the sixteen hypothesis test questions, the support we felt

essential to conclude that the current MCCMS have a favorable attitude toward the MMEP was not achieved. The eight areas that the respondents answered with a majority of affirmative answers led us to conclude: (1) The reduction in the Veterans' benefits improved the attitudes toward the MMEP; (2) cost was not a major factor in selecting the MMEP over other graduate programs; (3) if the MMEP was not available the MCCMS would have enrolled in another graduate education program; (4) the amount and content of the prerequisite courses are appropriate; (5) supervisors encourage participation in the MMEP; (6) the local AFIT detachment commander promotes enrollment in the MMEP; (7) the contracting university's resident director actively promotes the MMEP; and (8) the contracting university's resident director seeks out and solves the problems of the students.

Of the eight areas where a clear majority of affirmative answers do not exist, four are concerning attitudes of the MMEP program being more useful to the individual or to the Air Force, than the other graduate programs presently being offered on their base. The fifth area deals with participation in the MMEP improving duty performance. The sixth area pertains to the AFIT detachment commander making the effort to help resolve MMEP related problems. The seventh area concerns the preferences of the crew members for MMEP if their duty schedule could have been built

Table 60

PROPOSITION 3: HYPOTHESIS TEST RESULTS-
 MCCMs' ATTITUDES TOWARD THE MMEP
 (1980)
 (χ^2 One Sample Test)

Hypothesis Number	Question Number	Majority Favorable	Signifi- cance*	Support Proposition
13	27	Yes	+	Yes
14	54	Yes	+	Yes
15	52	Yes	+	Yes
16	57	No	-	No
17	32	No	-	No
18	36	Yes	-	No
19	41	No	+	No
20	55	No	-	No
21	31	No	+	No
22	30	No	+	No
23	29	No	+	No
24	33	Yes	+	Yes
25	34	Yes	-	No
26	28	Yes	-	No
27	56	No	-	No
28	53	Yes	+	Yes

* + means statistically significant,
 - means not statistically significant.

around one of the alternate graduate programs. The final area dealt with the MCCMS attitudes toward prerequisite courses. Since there was not a clear majority of responses which would indicate a preference for a graduate program without the prerequisites demanded by the MMEP, this could indicate that crew members perceive the prerequisites offering credibility to the MMEP.

Unfortunately, only four of the hypothesis and test questions could be statistically analyzed by use of the Mann-Whitney Rank Sum Test. The other twelve questions were new and thus did not afford the opportunity for comparison over time. The results of this statistical analysis is summarized in Table 61. The data from this last two-year period shows that none of the four hypothesis tested improved. In fact, in all four cases the attitude of the crew members have declined since the Engel and O'Neill study. However, only one of these declines has achieved statistical significance: the feeling that the AFIT detachment commander makes every effort possible to help resolve MMEP related problems.

Objective 3

To determine if the Minuteman combat crew members would be willing to accept modifications in the current MMEP, in the form of alternate curriculums, alternate course presentation methods, or alternate graduate degree programs.

Table 61

PROPOSITION 1: HYPOTHESIS TEST RESULTS
ENGEL & O'NEILL TO CURRENT SURVEY
(1978 to 1980)
(Mann-Whitney Rank Sum Test)

Hypothesis Number	Question Number	Movement*	Signifi- cance**	Support Proposition
20	55	-	-	No
24	33	-	-	No
25	34	-	-	No
27	56	-	-	No

* + means movement in the predicted direction, and
- means movement not in the predicted direction.

** + means statistically significant,
- means not statistically significant.

Research Question 1. Do the MCCMs have a favorable attitude toward replacing the current MMEP curriculum with one of the academic specialities that have been identified as having a large current and projected shortage?

Survey Question 35.

Would the MMEP be (or have been) more attractive to you if the curriculum had been centered around any one of the following academic specialities that have been identified as having a large current and projected shortage within the Air Force? (See Table 62.)

1. Data Processing
 2. Telecommunications
 3. Special facilities Management
 4. Engineering Management
 5. Logistics Management
 6. Public Relations
 7. Electronic Engineering
 8. Criminology
- a. A definite yes
 - b. A qualified yes
 - c. Neutral/undecided
 - d. A qualified no
 - e. A definite no

Comments: Sixty-nine percent of the crew members reported that the MMEP would be more attractive if the curriculum had been centered around any one of the academic specialities that were identified as having a large current or projected shortage.

Of the crew members that were not presently interested in the MMEP degree 84 percent thought the MMEP would have been more attractive if another academic speciality had been introduced.

Crosstabulation with all sixteen demographic data questions revealed that virtually 60 to 70 percent of each demographic category believed the MMEP would have been more attractive if the degree had been centered around one of the current shortage fields.

Table 62

MMEP MORE ATTRACTIVE WITH ALTERNATE CURRICULUM
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
a. A definite yes	130	46.8
b. A qualified yes	62	22.3
c. Neutral/undecided	32	11.5
d. A qualified no	24	8.6
e. A definite no	30	10.8

Survey Question 37.

Would you be in favor of seeing the current MMEP curriculum replaced with alternate academic specialties identified in question number 35? (See Table 63.)

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided
- d. A qualified no
- e. A definite no

Table 63

REPLACEMENT OF MMEP CURRICULUM
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
a. A definite yes	110	39.6
b. A qualified yes	66	23.7
c. Neutral/undecided	51	18.3
d. A qualified no	31	11.2
e. A definite no	20	7.2

Comments: The comments pertaining to survey question 37 are combined with those for question 60.

Survey Question 60.

Assuming that the following academic programs were available through the Minuteman Education Program, rank the three most desirable, in your order of preference, best first: (see Table 64.)

1. Data Processing
2. Telecommunications
3. Special Facilities Management
4. Engineering Management
5. Logistics Management
6. Public Relations
7. Electronic Engineering
8. Criminology
9. The Present MMEP curriculum

Comments: The percentages are based on the assumption that the crew member did not select any one response more than once, in his three choices. Thus, 44 percent of the crew members (122 out of 278) surveyed, selected data processing as either their first, second, or third choice.

A majority of the respondents from each of the six bases were in favor of seeing the current MMEP curriculum replaced with one of the shortage academic specialities. The percentage breakout for each of the other demographic data questions ranged around 50 to 70 percent for replacement of the current program with a shortage speciality.

Table 64
MOST DESIREABLE PROGRAMS
(Questionnaire Data)

Response (N=278)	1st Choice	2nd Choice	3rd Choice	Percent- age
Data Processing	40	40	42	43.9
Present MMEP Curriculum	56	25	19	39.6
Engineering Management	34	35	30	35.6
Logistics Management	22	34	29	30.6
Public Relations	24	29	23	27.3
Electronic Engineering	22	21	22	23.4
Telecommunications	16	22	22	21.5
Criminology	12	12	15	14.0
Special Facilities Management	8	12	13	11.8
No Response	44	48	53	--

Although the majority of respondents were in favor of seeing the current MMEP curriculum replaced, the responses of the crew members varied without a significant polarization in any one field of study. Seemingly the one field which would have satisfied the most crew members was data processing with 44 percent of the crew members choosing it as either their first, second, or third choice. The next area of concentration which received the most responses was the present MMEP curriculum, with approximately 40 percent of the crew members selecting it as one of their top three choices.

Survey Question 38.

If available via the MMEP, would you have participated in a program leading to an undergraduate degree in engineering? (See Table 65.)

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided
- d. A qualified no
- e. A definite no

Comments: Approximately 52 percent of the crew members said that they would participate in a program leading to an under graduate degree in engineering if it was available through the MMEP. Of the present participants, 57 percent said they would participate in the

Table 65

UNDERGRADUATE DEGREE IN ENGINEERING
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
a. A definite yes	79	28.4
b. A qualified yes	67	24.1
c. Neutral/undecided	38	13.7
d. A qualified no	35	12.6
e. A definite no	59	21.2

undergraduate engineering degree. Additionally, 47 percent of the nonparticipants also said they would enroll.

Willingness to enroll in the undergraduate engineering degree varied by base. The figures are portrayed in Table 66.

Apparently the potential for individuals to enter the "critical" field of engineering could at least be partially satisfied from current Air Force resources. In the current survey, 24 crew members responded that their undergraduate degree was in the field of engineering.

Conclusion.

Although 69 percent of the crew members believed that the MMEP would have been more attractive if the curriculum had been centered around one of the academic

Table 66
ENROLL IN UNDERGRADUATE ENGINEERING PROGRAM

Base	Willing to Enroll (Crew Members)	Percentage
Malmstrom	13	42.0
Ellsworth	34	61.8
Minot	36	60.0
Whiteman	19	48.7
F. E. Warren	20	39.3
Grandforks	24	57.1

specialities that had been identified as having a large or current projected shortage, no one curriculum seemed to satisfy the majority of crew members. However, the present MMEP curriculum was identified as the first choice of more of the crew members than any other academic speciality listed and as the second best contender when all three responses were taken into consideration.

Although 69 percent of the crew members reported that the MMEP would have been more attractive with a different curriculum, only 63 percent were in favor of seeing it replaced by one of the alternatives. These percentages did not seem to vary with the demographic distribution of the population.

We therefore concluded that the Minuteman combat crew members would be willing to accept modifications in the current MMEP, in the form of alternate curriculums and alternate graduate degree program. However, the seeming lack of consensus of opinion in these two areas is not conducive to selecting a viable alternative to the present MMEP. In fact, with the data available, the present MMEP would seem to be the best choice from the nine curriculums; since, it is already instituted and it is the second most popular choice.

Research Question 2. Do the MCCMs feel that some of the graduate level degrees presently offered at their base of assignment are more suitable to their past educational background and current educational goals and preferences than the MBA offered by the MMEP?

Survey Question 39.

Are there graduate degree programs offered at your base of assignment which are more directly related to your current educational goals and preferences than the MBA offered by the MMEP? (See Table 67.)

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided
- d. A qualified no
- e. A definite no

Table 67

DEGREE PROGRAM MORE DIRECTLY RELATED TO
CURRENT EDUCATIONAL GOALS
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
a. A definite yes	72	25.8
b. A qualified yes	42	15.1
c. Neutral/undecided	28	10.0
d. A qualified no	47	16.9
e. A definite no	89	32.0

Comments: Forty-one percent of the MCCMS feel that some of the graduate level degrees presently offered at their base of assignment are more suitable to their current educational goals and preferences than the MBA offered by the MMEP. The responses varied by the base of assignment. At Whiteman, 51 percent of the crew members felt that some of the graduate level degrees were more suitable; whereas, 43 percent of the crew members at F. E. Warren and Minot, 42 percent of the crew members at Malmstrom, 38 percent of the crew members at Grand Forks, and 31 percent of the crew members at Ellsworth were of the same opinion. The responses varied by type of undergraduate degree. These results are listed in Table 68.

Table 68
RESPONSES BY UNDERGRADUATE DEGREE

Undergraduate Degree	Affirmative	Neutral	Negative
Engineering	37.5	16.7	45.8
Social Sciences	63.7	5.8	30.4
Business Management	27.7	9.9	62.4
Mathematics	14.3	14.3	71.5
Physical Education	83.4	0.0	16.7
Physical Science	36.0	12.0	52.0
Education	33.3	16.7	50.0
Arts and Letters	33.3	33.3	33.3
Agriculture	42.9	0.0	57.2
Other	53.0	5.9	41.2

Survey Question 40.

Are there graduate degree programs at your base of assignment which are more directly related to your past educational background than the MBA offered by MMEP?

(See Table 69.)

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided
- d. A qualified no
- e. A definite no

Table 69
DEGREE PROGRAM MORE DIRECTLY RELATED TO
PAST EDUCATIONAL BACKGROUND
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
a. A definite yes	72	25.8
b. A qualified yes	33	11.8
c. Neutral/undecided	19	6.8
d. A qualified no	53	19.0
e. A definite no	101	36.3

Comments: Thirty-eight percent of the crew members felt that there were graduate degree programs at their present base of assignment which were more directly related to

their past educational background than the MBA offered by the MMEP.

The responses varied by base of assignment. At Malmstrom 52 percent of the crew members felt there were other graduate degrees more directly related to their past background. This percentage declined to 39 percent at F. E. Warren, 37 percent at Minot, 36 percent at Grand Forks. The results varied by type of undergraduate degree. These results are listed in Table 70.

Conclusion.

Although some MCCMS felt that some graduate level degrees offered at their base of assignment were more suitable to their past educational background and current educational goals and preferences than the MBA offered by the MMEP the responses seemed to be mixed without a clear majority in either the affirmative or the negative.

Research Question 3. Would the Minuteman crew members be willing to utilize an alternate form of material presentation in their graduate education program?

Survey Question 42.

Would you participate in MMEP if a substantial portion of the classroom instruction originated elsewhere but was brought to your classroom in real time via audio-visual telecommunications equipment? (See Table 71.)

Table 70
RESPONSES BY UNDERGRADUATE DEGREE

Undergraduate Degree	Affirmative	Neutral	Negative
Engineering	41.7	16.7	41.7
Social Sciences	66.6	7.2	26.0
Business Management	14.8	5.9	79.2
Mathematics	21.4	0.0	78.5
Physical Education	66.6	0.0	33.4
Physical Science	40.0	8.0	52.0
Education	50.0	0.0	50.0
Arts and Letters	44.4	11.1	44.4
Agriculture	14.3	0.0	85.6
Other	53.0	5.9	41.1

Table 71
REAL TIME AUDIO-VISUAL TELECOMMUNICATIONS
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
a. A definite yes	48	17.3
b. A qualified yes	67	24.1
c. Neutral/undecided	76	27.3
d. A qualified no	41	14.7
e. A definite no	46	16.6

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided
- d. A qualified no
- e. A definite no

Comments: Forty-one percent of the respondents stated that they would participate in the MMEP is a substantial portion of the classroom instruction originated elsewhere but was brought to the classroom using real time telecommunications; whereas, 31 percent said they would not participate.

Survey Question 43.

Would you participate in a MMEP in which closed circuit television was utilized in presenting course material in your classroom? (See Table 72.)

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided
- d. A qualified no
- e. A definite no

Comments: Only 36 percent of the crew members responded that they would participate in an MMEP in which closed circuit television was utilized in presenting course material in the classroom; whereas, almost 40 percent said they would not participate.

Table 72
CLOSED CIRCUIT TELEVISION
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
a. A definite yes	33	11.9
b. A qualified yes	69	24.8
c. Neutral/undecided	65	23.4
d. A qualified no	53	19.1
e. A definite no	58	20.8

Of the graduates or present participants, 42 percent would participate. However, only 33 percent of those planning or considering participation would enroll if this form of material presentation was introduced.

Survey Question 44.

Would you participate in a MMEP in which a substantial portion of the classroom instruction was prerecorded on video cassettes which could be transported to the Launch Control Center? (See Table 73.)

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided
- d. A qualified no
- e. A definite no

Table 73
VIDEO CASSETTES
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
a. A definite yes	67	24.1
b. A qualified yes	83	29.9
c. Neutral/undecided	44	15.8
d. A qualified no	32	11.5
e. A definite no	52	18.7

Comments: A majority of crew members would participate in an MMEP in which a substantial portion of the classroom instruction was prerecorded on video cassettes that could be transported to the LCC.

Of the respondents who answered that they would not participate in the present MMEP, 47 percent said they would participate if video cassettes were utilized. However, only 56 percent of those now participating would participate if a substantial portion of the classroom instruction was prerecorded on video cassettes.

Survey Question 45.

Would you prefer a MMEP in which a substantial portion of the classroom instruction was prerecorded on video

cassettes which could be transported to the Launch Control Center to the present MMEP? (See Table 74.)

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided
- d. A qualified no
- e. A definite no

Table 74

PREFER MMEP WITH PRERECORDED CLASSROOM
INSTRUCTION OVER PRESENT PROGRAM
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
a. A definite yes	53	19.0
b. A qualified yes	57	20.5
c. Neutral/undecided	51	18.3
d. A qualified no	46	16.5
e. A definite no	71	25.5

Comments: Thirty-nine percent of the MCCMs preferred an MMEP in which a substantial portion of the classroom instruction was prerecorded on video cassettes to the present MMEP. Forty-two percent did not prefer that method of instruction and 18 percent were neutral/undecided.

Survey Question 46.

Would you participate in a MMEP in which a substantial portion of the classroom instruction was conducted by visiting AF and civil service professors from the resident school at AFIT? (See Table 75.)

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided
- d. A qualified no
- e. A definite no

Table 75

PARTICIPATE IN MMEP WITH CLASSROOM INSTRUCTION
CONDUCTED BY VISITING AFIT PROFESSORS
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
a. A definite yes	66	23.7
b. A qualified yes	88	31.6
c. Neutral/undecided	69	24.8
d. A qualified no	30	10.7
e. A definite no	25	8.9

Comments: Fifty-five percent of the MCCMs responded that they would participate in an MMEP in which a substantial portion of the classroom instruction was

conducted by visiting Air Force and civil service professors from the resident school of AFIT.

Survey Question 48.

Given the option of (1) teleteach or (2) a closed circuit TV, would you prefer the closed circuit TV?

(See Table 76.)

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided
- d. A qualified no
- e. A definite no

Table 76

TELETEACH VERSUS CLOSED CIRCUIT TV
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
a. A definite yes	15	5.3
b. A qualified yes	33	11.8
c. Neutral/undecided	89	32.0
d. A qualified no	62	22.3
e. A definite no	79	28.4

Comments: Seventeen percent of the MCCMs prefer closed circuit TV course presentation rather than

teleteach. Fifty-one percent prefer teleteach and 32 percent were neutral/undecided. Thus, a majority of MCCMs prefer teleteach over closed circuit TV as a method of importing classroom instruction.

Survey Question 47.

Would you prefer a MMEP in which a substantial portion of the classroom instruction was conducted by visiting professors from the resident schools at AFIT?

(See Table 77.)

- a. A definite yes
- b. A qualified yes
- c. Neutral/undecided
- d. A qualified no
- e. A definite no

Table 77

PREFER MMEP WITH CLASSROOM INSTRUCTION CONDUCTED
BY VISITING AFIT PROFESSORS
(Questionnaire Data)

Questionnaire Responses	Number of Respondents	Percentage of Respondents
a. A definite yes	37	13.3
b. A qualified yes	76	27.3
c. Neutral/undecided	93	33.4
d. A qualified no	39	14.0
e. A definite no	35	12.5

Comments: Forty-one percent of the MCCMs responded that they would prefer an MMEP in which a substantial portion of the classroom instruction was conducted by visiting professors from the resident school at AFIT. Twenty-six percent responded negatively and 33 percent responded neutral/undecided.

Conclusion.

The responses to survey questions 42, 43, 44, 45, 46, 47, and 48 answer the question as to whether or not the Minuteman combat crew members would be willing to accept alternate course presentation methods. The survey results indicate that a significant portion of the crew members would not be willing to accept a change in the way the material was presented. The results of the responses are shown in Table 78.

Approximately 30 percent of the MCCMs have an unfavorable attitude toward using real time audio visual telecommunications, closed circuit TV or video cassettes; another 15 to 30 percent are undecided and the remainder would be in favor of utilizing these systems. While 53 percent of the crew members would participate in a MMEP which utilized video cassettes, only 39 percent would prefer this method over the present program.

Additionally, while 55 percent of the crew members would participate in the program if the classroom

Table 78
SUMMARY OF RESULTS

	Favorable		Unfavorable		
	A	B	C	D	E
Real Time Audio-Visual Telecommunications	17.3	24.1	27.3	14.7	16.6
Closed Circuit Television	11.9	24.8	23.4	19.1	20.8
Video Cassettes	24.1	29.1	15.8	11.5	18.7
Prefer Prerecorded Instruction	19.0	20.5	18.3	16.5	25.5
Visiting AFIT Professors	23.7	31.6	24.8	10.7	8.9
Prefer Visiting AFIT Professors	13.3	27.3	33.4	14.0	12.5
Prefer Close Circuit TV	5.3	11.8	32.0	22.3	28.4

instruction was conducted by a visiting AFIT professor, only 40 percent would prefer this method.

From the results of these seven questions, we do not feel that the MCCMs would be willing to accept alternate forms of course material presentation at this time.

Ancillary Information.

The information from survey questions 58, 59, 61, 62, and 63 does not directly support any research question or proposition. However, it is information which complements other findings.

Survey question 58.

What primarily influenced you not to enroll in the Minuteman Education Program, or to drop out after enrollment? (See Table 79.)

- a. Conflict with duty
- b. Not interested in the degree offered
- c. Had established a date of separation
- d. Already had a master's degree
- e. Didn't qualify academically
- f. Too much time required for needed pre-requisites
- g. N/A: I am planning to participate in MMEP
- h. Other

Comments: The comments pertaining to survey question 58 are combined with those for question 59.

Survey Question 59.

What do you regard as the second most important factor which caused you to decide not to enroll in the MMEP? (See Table 80.)

- a. Conflict with duty
- b. Not interested in the degree offered
- c. Had an established date of separation
- d. Already had a master's degree
- e. Didn't qualify academically

Table 79

PRIMARY FACTOR NOT TO ENROLL IN THE MMEP
(Questionnaire Data)

Responses	Number Respondents	Percentage of Respondents
a. Conflict with duty	6	4.9
b. Not interested in the degree offered	37	30.5
c. Had established a date of separation	0	0.0
d. Already had a master's degree	13	10.7
e. Didn't qualify academically	4	3.3
f. Too much time required for needed prerequisites	40	33.0
g. N/A: I am planning to participate in MMEP	16	13.2
h. Other	5	4.1

Table 80

SECOND MOST IMPORTANT FACTOR WHICH CAUSED MCCMs
NOT TO ENROLL IN THE MMEP
(Questionnaire Data)

Responses	Number Respondents	Percentage of Respondents
a. Conflict with duty	8	6.6
b. Not interested in the degree offered	33	27.2
c. Had established a date of separation	3	2.4
d. Already had a master's degree	7	5.7
e. Didn't qualify academically	6	4.9
f. Too much time required for needed prerequisites	25	20.6
g. N/A: I am planning to participate in MMEP	15	12.3
h. Other	4	3.3
i. None, had it not been for the primary factor identified above, I would have enrolled or remained enrolled in MMEP	20	16.5

- f. Too much time required for needed prerequisites
- g. I am planning to participate in MMEP
- h. Other: Specify
- i. None, had it not been for the primary factor identified above, I would have enrolled or remained enrolled in the MMEP.

Comments: Questions 58 and 59 were only answered by non-participants. The primary reason given by 33 percent of the non-participants for not enrolling in the MMEP was too much time required for needed prerequisites. Additionally another 30 percent said their primary reason was that they were not interested in the degree offered. These two reasons surfaced as the number one and two choices for both the primary reason and the secondary reason for not enrolling in the MMEP.

Survey Question 61.

If it was in your power to change the MMEP to better meet your needs and the needs of the Air Force, what would you change?

Impressions of the responses: The responses varied from one individual to another. Some felt there was a scheduling problem between the MMEP and duty. Others felt the number of degrees offered should be increased, keeping the present curriculum and expanding into more technical

areas. The preference for the degrees listed in question 60 seemed to directly relate to the individual needs of the crew members. As one example, the crew members who chose engineering management as one of their top three choices tended to reflect the idea that engineering or technical degrees need to be included in the MMEP curriculum. Additionally, crew members would like to have more practical application of their degrees in their future assignments. A persistent theme encountered when the crew members were asked about the needs of the Air Force centered around the need for more flexibility in the number of degrees offered, thereby, enabling the Air Force to fulfill its current and projected shortages from this resource.

Survey Question 62.

If there are other forms of course presentation which would encourage you to participate in the present graduate MMEP, please list them below.

Impressions of the response: The majority of survey respondents did not have a response for this survey question.

Of those that did respond, there was a predominance of two suggestions. The most predominant suggestion dealt with prerecording classroom instruction on video cassettes. This would facilitate easy transportation to the field where the crew members could use them to their advantage.

It should be noted that such a system would call for an investment in hardware.

The other predominant suggestion dealt with course presentation by visiting resident AFIT professors. The motivation behind this response in some cases, dealt with dissatisfaction of course presentation by professors from the MMEP sponsoring schools.

Generally, the crew members have concerns in the areas of flexibility of material presentation and quality of classroom presentation.

Survey Question 63.

Do you have any comments on the merits/detractions of the current MMEP which you wish to highlight?

Impressions of the Responses: The crew members tended to respond that the MMEP takes too much time to complete and that there is not enough flexibility in acceptance of previous courses completed as prerequisites for the MMEP. The attitude that the program was too long seemed to be centered around the number of prerequisites required.

Another factor which seemed prevalent was the scheduling conflicts between the AFIT program and the job requirements. This problem could be inadvertently promoted by another factor, which came to light, the perceived lack of command support, i.e., the Wing Deputy Commander of Operations.

CHAPTER V

DISCUSSIONS AND CONCLUSIONS

Introduction

This chapter presents the significant findings of this research effort as they pertain to the three research objectives. We conclude by offering some general recommendations for further research concerning the missile operations career field, and the Minuteman Education Program.

Objectives and Findings

Objective 1

Objective 1 was to ascertain the current attitudes of the Minuteman combat crew members toward their job, their career field, and the Minuteman Education Program.

This objective was satisfied by administering a survey questionnaire to 480 MCCMS. The response rate of 59 percent was comparable to the two previous surveys. However, we must agree with both Ashbaugh and Godfrey's and Engel and O'Neill's conclusion: that the attitudes reflected by the survey respondents may not be a reasonably accurate reflection of the attitudes of the total MCC force due to nonrespondent bias (1:111; 5:102).

However, the lack of response by the crew members was probably more attributable to other factors, since the percentage of returns varied drastically from base to base. This could suggest that due to differences in attitudes at the different bases, MCCMS at some bases were less inclined to answer/respond to the questionnaire than MCCMS at other bases. Another possibility could be the way in which the survey was administered by the project officers at the individual missile bases. This could have had a more significant influence on the return rate than the difference in attitudes between respondents and non-respondents. Although a responsible project officer, the AFIT detachment commander, was assigned to monitor the progress of the survey, in some cases the actual task was performed by less informed and less responsible individuals. At one base the AFIT detachment commander had gone PCS and his secretary delegated the responsibility to a junior officer in one of the missile squadrons. Other detachment commanders delegated this responsibility to junior officers in order to provide them with a project which would enhance their Officer's Effectiveness Report. Unfortunately, in some cases adequate follow up action was not taken to ensure the maximum participation.

Objective 2

Objective 2 was to compare the sample of current attitudes of the Missile combat crew members (MCCMs) with the results of previous studies to determine whether a significant difference in attitudes had occurred in the last four years in the areas of job, career field, and the Minuteman Education Program (MMEP).

Proposition 1. Proposition 1 stated that the attitudes of the MCCMs toward their jobs and the missile operations career field have improved since the Ashbaugh and Godfrey study in May 1976. Hypothesis 1 through 8 were tested in order to confirm or deny this proposition.

Generally, we found that the MCCMs' attitudes have not improved toward their job or their career field since the Ashbaugh and Godfrey Survey in 1976. In fact, since 1978 MCCMs' attitudes toward their job and the career field have declined.

Statistically significant is the fact that the attitudes toward the work schedule and the physical working environment have declined; whereas, only one area, sense of personal accomplishment, improved. The remaining five areas were statistically unchanged from the time of the Ashbaugh and Godfrey survey. However, during the last two-year period, all eight areas measured have declined.

Our results are therefore comparable and support both Ashbaugh and Godfrey and Engel and O'Neill and thus we agree with their conclusions: "The MCCMS do not have a favorable attitude toward their job or the missile operations career field [1:112; 5:103]."

Generally, as tenure in the job increased, the attitudes toward the job declined. This could indicate that the new crew members had favorable expectations concerning crew duty which later changed. The catalyst of this change cannot be directly determined, however, further study in this area could possibly reveal the cause or causes.

Proposition 2. Proposition 2 stated that the MMEP is an incentive in attracting officers into the missile career field. Hypotheses 9 through 12 were tested in order to confirm or deny this proposition.

In general, the findings supported the proposition. A majority of MCCMs regarded the possibility of attaining a master's degree through the MMEP as a major consideration in their decision to volunteer for crew duty. This majority carried over to a perception of the MMEP as a significant career benefit.

A majority of MCCMs who were graduates of or participants in the MMEP consider the MMEP to be one of the most positive aspects of crew duty. Likewise, a majority

of those same respondents believe that crew duty would be a waste of valuable career time had it not been for the MMEP.

These results indicated that MMEP is a key incentive in attracting officers to the missile career field. They seemed to perceive the MMEP as being a positive and influencing aspect of an otherwise unsatisfactory assignment. This is virtually the same conclusion that both the previous thesis efforts arrived at when their data was analyzed. Of the four areas surveyed, three showed statistically significant improvement and the fourth showed a positive trend, although not statistically significant. Thus, the MCCMs' attitude toward the MMEP is improving but their attitudes toward their job and their career field is in a state of decline.

Proposition 3. Proposition 3 stated that the current MCCMs have a favorable attitude toward the MMEP. Hypothesis 13 through 28 were tested in order to confirm or deny this proposition.

The findings did not provide adequate support for the proportion. However, in eight areas the majority of respondents answered with an affirmative answer, thus we were able to conclude:

1. The crew members perceived the decline in the Veterans' Administration benefits as an enhancement to the MMEP.

2. The majority of MCCMs who were graduates of or participants in the MMEP would have enrolled in the program even though the cost involved was the same as the other off-duty graduate education programs.

3. The majority of MCCMs that were graduates or participants in the MMEP would have enrolled in another graduate degree program had the MMEP not been available.

4. The majority of crew members who were graduates of or participants in the MMEP believed that the amount and content of the MMEP prerequisite courses were appropriate; since, they did not indicate a preference for another graduate level management degree program which did not require prerequisite courses.

5. The crew members perceived their supervisors promoting the MMEP.

6. The local AFIT commander promotes the MMEP but not as actively as the supervisors or the contracting university's resident director.

7. The contracting university's resident director actively promotes the MMEP.

8. The MCCMs perceived the contracting university's resident director as making every effort possible in solving AFIT related problems.

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ANALYSIS OF MINUTEMAN MISSILE CREW MEMBER ATTITUDES TOWARD PRES--ETC(U)
JUN 80 D L KEMP, A T RYBACKI
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In the other areas where a clear majority of affirmative answers did not exist the crew members seemed to perceive little difference between the MMEP and other on-base programs in the areas of: academic difficulty; use of degree in current and future assignments; need for education/degree; enhancement of promotion opportunity; and use of the degree in various fields/work. Additionally, the AFIT detachment commanders appear to have lost credibility with the crew members in solving AFIT related problems, as evidenced by their perceptions.

In general it can be assumed that the factors of prerequisites, cost, and scheduling had no bearing on the choice of programs for the MMEP participants or graduates. It should be noted, however, that the major reasons given by non-participants for non-enrollment in the MMEP were the amount of prerequisites and the type of degree offered.

Objective 3

Objective 3 was to determine if the Minuteman combat crew members would be willing to accept modifications in the current MMEP, in the form of alternate curriculum, alternate course presentation methods, or alternate graduate degree programs. In order to accomplish this objective, three research questions were developed. The first, research question 1, dealt with the replacement of the MMEP curriculum with one of the shortage academic

specialities; the second, research question 2, dealt with the attitudes of the crew members toward alternate degree programs presently offered at their base; and the third, research question 3, dealt with the crew member's attitudes toward alternate forms of material presentation.

Analysis of the data pertaining to research question 1, revealed that overall 69 percent of the crew members felt that the MMEP would have been more attractive if it had been centered around one of the eight academic specialities that were identified as having a large current or projected shortage. Additionally, 84 percent of the crew members not presently interested in the MMEP felt that the program would have been more attractive if another academic specialty was introduced. Unfortunately, no one curriculum seemed to satisfy the majority of crew members. However, the present MMEP curriculum was chosen as the first choice of more of the crew members than any other academic speciality listed and as the second best contender when the crew member's first three preferences were combined.

A majority of the crew members said they would participate in a program leading to an undergraduate degree in engineering if it was available through the MMEP. However, it must be remembered that the willingness to participate and the ability to participate do not always go hand in hand. Additionally, to institute such a program could

require the civilian school to have adequate engineering laboratories and other facilities available to the participating MCCMs.

Although the MCCMs would be willing to accept modifications in the current MMEP, in the form of alternate curriculums and alternate graduate degree programs, the lack of consensus in these two areas would make it difficult to select a viable alternative to the present MMEP. In fact, based on the data available, the present MMEP would seem to be the best choice from the nine curriculums; since, it is already instituted and is, overall, the second most popular choice.

Analysis of the data pertaining to research question 2, revealed that almost 40 percent of the MCCMs felt that some of the graduate level degrees presently offered at their base of assignment are more suitable to their past educational background and/or current educational goals and preferences than the MBA offered by MMEP.

A minority of the MCCMs that were enrolled or graduates of MMEP felt they would prefer a graduate degree without the prerequisites. However, this increased drastically for those who were planning to participate or considering participation. Additionally, the vast majority of participants and graduates were either undecided or stated that they would not have preferred enrolling in an alternative graduate program even if their duty schedule had

been built around the alternate school schedule or if they could have entered the other program at the same personal cost as with the MMEP.

Analysis of data pertaining to research question 3, reveals that the MCCMs would not be willing to utilize an alternate form of material presentation in their graduate program. Naturally, the responses varied according to the type of material presentation offered. However, the crew members were most willing to accept a MMEP in which substantial portion of the classroom instruction was prerecorded on video cassettes which could be transported to the LCC.

Approximately 41 percent of the MCCMs would have been willing to participate in the MMEP if a substantial portion of the classroom instruction originated elsewhere and was brought to the classroom via audio visual telecommunications equipment. The positive responses declined when the crew members were asked if they would participate in the MMEP in which closed circuit television was utilized in presenting course material. When these two systems were measured against each other only 17 percent of the crew members would prefer the closed circuit television over the teleteach method; whereas, 51 percent would not.

Although a majority of the MCCMs would participate in the MMEP if a substantial portion of the classroom instruction was conducted by visiting Air Force and civil

service professors, from the resident school at AFIT, only 41 percent of the crew members would prefer this method over the present MMEP.

In summary the research found that the majority of crew members would be willing to accept modifications in the form of alternate curriculums and alternate graduate degree programs. However, they do not seem willing to modify the current presentation methods, for one of those suggested, or change the present MMEP curriculum to one which would better meet current and future Air Force needs.

Recommendations for Future Research

Since the attitudes of the missile combat crew members have virtually remained unchanged since May 1976, it is apparent that the causes for this dissatisfaction have not been isolated and corrected. Therefore, future research can try and identify these causes and recommend potential solutions. The data base used in this study along with that used by Ashbaugh and Godfrey and Engel and O'Neill are available for future use by contacting Lieutenant Colonel Micheal B. McCormick, HQ AFIT (CIS), Wright-Patterson Air Force, Base, Ohio 45433.

In researching why individuals did not enroll in the MMEP eight responses were solicited from the nonparticipating MCCMs. A more detailed examination of these

reasons for nonenrollment and suggestions for improving the program could be undertaken.

Alternatives and/or enhancements to the present MMEP should be considered for future research to ascertain if the volunteer rate for MCCM duty and retention rate of MCCMs could be enhanced. Possible alternatives include:

1. Guarantee MCCMs a quota for one of AFIT's graduate programs after they complete their tour of duty as an MCCM. Naturally they would have to meet the prerequisites and the quota would have to fulfill a valid Air Force need.

2. Broaden the MMEP so that it would pay the difference between tuition assistance and the actual cost of the education received by the individual if prior approval was granted by Headquarters Strategic Air Command.

The MCCMs attitudes seems to vary by base; thereby, indicating that there are attitudinal differences dependent on location or unit of assignment. If this is true, and poor attitudes are a result of local policies, procedures, and administration, then further research should be conducted to determine exactly what is causing the variance, thus allowing corrective action to be instituted.

MCCMs seemed to have preconceived ideas of what missile duty entailed and what their actual work schedule would be like. Further research should be conducted to see if the difference in preconceived ideas and first impressions of the real job cause a decline in overall crew member attitude.

APPENDIXES

APPENDIX A
QUESTIONNAIRE

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (ATC)
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433



REPLY TO
ATTN OF: LSH (LSSR 25-80/Capt Kemp/Capt Rybacki/AUTOVON 785-6761)

SUBJECT: Missile Combat Crew Member Survey

TO:

1. The attached survey was prepared by a research team at the Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio. The purpose of the survey is to measure the current attitudes of missile combat crew members toward missile combat crew duty, the missile operations career field, the present Minuteman Education Program, and alternatives to the present Minuteman Education Program.
2. You are requested to provide an answer or comment for each applicable question. Headquarters USAF Survey Control Number 80-42 has been assigned to this survey. Your participation in this research is voluntary.
3. Your responses to the questions will be confidential since the completed surveys are not identified to individuals. Please remove this cover sheet before returning the completed survey to your wing project officer. Your cooperation in providing this data will be appreciated and will be beneficial in evaluating the impact of the Minuteman Education Program on missile combat crew member attitudes.


LEWIS M. ISRAELITT, Colonel, USAF
Dean
School of Systems and Logistics

- 2 Atch
1. Privacy Act Statement
2. Questionnaire

MISSILE COMBAT CREW MEMBER SURVEY

This survey is designed to obtain your perceptions of your job and the missile operations career field. There are no "trick" questions and there are no "right" answers. Please answer each question as honestly and frankly as possible from the choices available. Select only one answer for each question.

Thank you for your cooperation and willingness to contribute your time and effort to this study.

PRIVACY STATEMENT

In accordance with paragraph 8, AFR 12-35, the following information is provided as required by the Privacy Act of 1974:

a. Authority:

(1) 5 U.S.C. 301, Departmental Regulations,
and/or

(2) 10 U.S.C. 8012, Secretary of the Air Force, Powers, Duties, Delegation by Compensation; and/or

(3) DOD Instruction 1100.13, 17 April 68, Surveys of Department of Defense Personnel; and/or

(4) AFR 30-23, 22 Sep 76, Air Force Personnel Survey Program.

b. Principal purposes. The survey is being conducted to collect information to be used in research aimed at illuminating and providing inputs to the solution of problems of interest to the Air Force and/or DOD.

c. Routine Uses. The survey data will be converted to information for use in research of management related problems. Results of the research, based on the data provided, will be included in the written master's thesis and may also be included in other published articles, reports, or texts. Distribution of the results of the research, based on the survey data, whether in written form or presented orally, will be unlimited.

d. Participation in this survey is entirely voluntary.

e. No adverse action of any kind may be taken against any individual who elects not to participate in any or all of this survey.

USAF SCN 76-121

PART I

Please mark your answer on the answer sheet provided for questions 1 through 57.

1. What is your base of assignment?

a. Malmstrom	31
b. Ellsworth	55
c. Minot	60
d. Whiteman	39
e. F. E. Warren	51
f. Grand Forks	42

2. To what type of crew are you assigned?

a. Line	184
b. Instructor	57
c. Standboard	37

3. What is your crew position?

a. MCCC	165
b. DMCCC	113

4. How many months of missile combat ready experience do you have?

a. 0 - 6 months	18
b. 7 - 12 months	46
c. 13 - 18 months	42
d. 19 - 24 months	41
e. 25 - 30 months	57
f. 31 - 36 months	21
g. More than 36 months	53

5. What is your grade?

a. Second Lieutenant	76
b. First Lieutenant	118
c. Captain	74
d. Major	10
e. Lieutenant Colonel	0

6. What is your source of commission?

a. Air Force Academy	28
b. ROTC	202
c. AECP (OTS/SMSO)	14
d. OTS/SMSO	27
e. Other	7

7. Are you a regular Officer?

a. Yes	78
b. No	200

8. What is your aeronautical rating?

a. Pilot	4
b. Navigator	2
c. Not rated	272

9. How many years of federal commissioned service have you completed?

a. less than one year	19
b. one to two years	60
c. two to four years	116
d. four to eight years	50
e. eight to twelve years	16
f. twelve years or more	17

10. What is your highest academic level?

a. Bachelor's degree	56
b. Bachelor's degree with some graduate level courses	159
c. Master's degree	58
d. More than one master's degree	5
e. Doctorate degree	0

11. In what area of study is your undergraduate degree?
- | | |
|---|-----|
| a. Engineering | 24 |
| b. Social Sciences (sociology, psychology, etc.) | 69 |
| c. Business/Management (accounting, management, etc.) | 101 |
| d. Mathematics (statistics, computer science) | 14 |
| e. Physical education | 6 |
| f. Physical science (chemistry, biology, physics) | 25 |
| g. Education (elementary, secondary) | 6 |
| h. Arts & letters (art, music, language, literature) | 9 |
| i. Agriculture, forestry, etc. | 7 |
| j. Other. | 17 |
12. Were you a volunteer for missile crew duty?
- | | |
|--|-----|
| a. Yes, first choice | 192 |
| b. Yes, second choice | 26 |
| c. Yes, third choice | 14 |
| d. Yes, had to volunteer for missiles to come on active duty | 23 |
| e. No | 23 |
13. Do you intend to make the Air Force a career?
- | | |
|----------------------|----|
| a. A definite yes | 97 |
| b. A qualified yes | 87 |
| c. Neutral/undecided | 59 |
| d. A qualified no | 14 |
| e. A definite no | 21 |
14. Does your present duty AFSC have a negative bearing on your career intentions?
- | | |
|----------------------|----|
| a. A definite yes | 47 |
| b. A qualified yes | 59 |
| c. Neutral/undecided | 48 |
| d. A qualified no | 50 |
| e. A definite no | 74 |
15. Does your present location of assignment have a negative bearing on your career intentions?
- | | |
|----------------------|-----|
| a. A definite yes | 28 |
| b. A qualified yes | 35 |
| c. Neutral/undecided | 42 |
| d. A qualified no | 57 |
| e. A definite no | 116 |

16.	Have you graduated from or are you presently enrolled in the Minuteman Education Program (MMEP)?	
a.	Yes	153
b.	No, but I plan to participate in the MMEP	20
c.	No, but I am considering MMEP participation	19
d.	No, and I do not intend to participate in the MMEP	86
17.	Do you like your job?	
a.	A definite yes	52
b.	A qualified yes	116
c.	Neutral	26
d.	A qualified no	44
e.	A definite no	40
18.	Do you feel a sense of personal accomplishment when performing your job?	
a.	A definite yes	63
b.	A qualified yes	97
c.	Neutral	35
d.	A qualified no	45
e.	A definite no	38
19.	Do you enjoy doing the actual work involved in accomplishing your job?	
a.	A definite yes	49
b.	A qualified yes	99
c.	Neutral	41
d.	A qualified no	56
e.	A definite no	33
20.	Do you feel that you are given adequate individual responsibility in your job?	
a.	A definite yes	75
b.	A qualified yes	99
c.	Neutral	22
d.	A qualified no	37
e.	A definite no	45
21.	Are you satisfied with your work schedule?	
a.	A definite yes	25
b.	A qualified yes	89
c.	Neutral	27
d.	A qualified no	58
e.	A definite no	79

22. Do you consider the physical working environment of the capsule (launch control center) to be satisfactory?
- | | |
|--------------------|----|
| a. A definite yes | 14 |
| b. A qualified yes | 52 |
| c. Neutral | 36 |
| d. A qualified no | 81 |
| e. A definite no | 95 |
23. Does your job have a favorable effect on your personal life?
- | | |
|--------------------|----|
| a. A definite yes | 17 |
| b. A qualified yes | 31 |
| c. Neutral | 74 |
| d. A qualified no | 74 |
| e. A definite no | 82 |
24. Do you think the opportunity for advancement in the missile operations field is at least as good as other Air Force Career fields?
- | | |
|--------------------|----|
| a. A definite yes | 39 |
| b. A qualified yes | 87 |
| c. Neutral | 52 |
| d. A qualified no | 54 |
| e. A definite no | 46 |
25. The possibility of attaining a master's degree through the MMEP was a major consideration in my decision to volunteer for MCCM duty.
- | | |
|---------------------------|-----|
| a. Strongly agree | 106 |
| b. Agree | 69 |
| c. Neutral | 28 |
| d. Disagree | 17 |
| e. Strongly Disagree | 36 |
| f. N/A: did not volunteer | 22 |
26. Do you consider the MMEP to be a significant career benefit of missile duty?
- | | |
|-----------------------------|-----|
| a. Yes, significant benefit | 155 |
| b. Yes, some benefit | 100 |
| c. No benefit | 23 |

27. Do you feel that the change (reduction) in G.I. Bill educational benefits has enhanced the attractiveness of the MMEP when compared to alternative graduate degree programs?

a. A definite yes	84
b. A qualified yes	75
c. Neutral/undecided	69
d. A qualified no	28
e. A definite no	22

28. Does the contracting university's resident director actively promote enrollment in the MMEP?

a. A definite yes	70
b. A qualified yes	71
c. Neutral/undecided	91
d. A qualified no	29
e. A definite no	17

29. Do you feel that the possession of an advanced degree from the MMEP enhances an officer's promotion opportunity more than an advanced degree from other schools offering graduate programs on base?

a. A definite yes	20
b. A qualified yes	38
c. Neutral/undecided	85
d. A qualified no	55
e. A definite no	80

30. Do you feel that in the future there will be a greater Air Force need for officers possessing the type of graduate education provided by the MMEP than for officers with the type of graduate education provided by other schools offering graduate programs on base?

a. A definite yes	26
b. A qualified yes	49
c. Neutral/undecided	76
d. A qualified no	63
e. A definite no	64

31. Do you feel that an advanced degree from the MMEP will enhance your performance in future Air Force assignments more than would an advanced degree from other schools offering graduate programs on base?
- | | |
|----------------------|----|
| a. A definite yes | 33 |
| b. A qualified yes | 47 |
| c. Neutral/undecided | 76 |
| d. A qualified no | 54 |
| e. A definite no | 68 |
32. Do you feel that the AFIT/MMEP is academically more difficult (rigorous) than other locally available off-duty graduate education programs?
- | | |
|----------------------|----|
| a. A definite yes | 61 |
| b. A qualified yes | 66 |
| c. Neutral/undecided | 91 |
| d. A qualified no | 35 |
| e. A definite no | 25 |
33. Did your supervisors encourage you to participate in the MMEP?
- | | |
|----------------------|-----|
| a. A definite yes | 58 |
| b. A qualified yes | 104 |
| c. Neutral/undecided | 42 |
| d. A qualified no | 44 |
| e. A definite no | 30 |
34. Does the local AFIT/MMEP detachment commander actively promote enrollment in the MMEP?
- | | |
|----------------------|----|
| a. A definite yes | 64 |
| b. A qualified yes | 86 |
| c. Neutral/undecided | 71 |
| d. A qualified no | 34 |
| e. A definite no | 24 |

35. Would the MMEP be (or have been) more attractive to you if the curriculum had been centered around any one of the following academic specialities that have been identified as having a large current and projected shortage within the Air Force.

1. Data processing
2. Telecommunications
3. Special facilities management
4. Engineering management
5. Logistics management
6. Public relations
7. Electronic engineering
8. Criminology

a. A definite yes	130
b. A qualified yes	62
c. Neutral/undecided	32
d. A qualified no	24
e. A definite no	30

36. From what you know, do you believe that the amount and content of the Minuteman Education Program prerequisite courses are appropriate?

a. A definite yes	51
b. A qualified yes	102
c. Neutral/undecided	82
d. A qualified no	24
e. A definite no	19

37. Would you be in favor of seeing the current MMEP curriculum replaced with alternate academic specialties identified in Question 35?

a. A definite yes	110
b. A qualified yes	66
c. Neutral/undecided	51
d. A qualified no	31
e. A definite no	20

38. If available via the MMEP, would you have participated in a program leading to an undergraduate degree in engineering?

a. A definite yes	79
b. A qualified yes	67
c. Neutral/undecided	38
d. A qualified no	35
e. A definite no	59

39. Are there graduate degree programs offered at your base of assignment which are more directly related to your current educational goals and preferences than the MBA Offered by the MMEP?

- | | |
|----------------------|----|
| a. A definite yes | 72 |
| b. A qualified yes | 42 |
| c. Neutral/undecided | 28 |
| d. A qualified no | 47 |
| e. A definite no | 89 |

40. Are there graduate degree programs at your base of assignment which are more directly related to your past educational background than the MBA offered by MMEP?

- | | |
|----------------------|-----|
| a. A definite yes | 72 |
| b. A qualified yes | 33 |
| c. Neutral/undecided | 19 |
| d. A qualified no | 53 |
| e. A definite no | 101 |

41. Would you prefer a graduate level management degree program which did not require any of the prerequisite courses currently required by the MBA Program offered by the MMEP?

- | | |
|----------------------|----|
| a. A definite yes | 65 |
| b. A qualified yes | 50 |
| c. Neutral/undecided | 77 |
| d. A qualified no | 45 |
| e. A definite no | 41 |

A potential method of providing a variety of graduate courses in the MMEP is through the use of a teleteach system. This system utilizes a combination of telephones to transmit educational materials from the transmitting facility to another location.

There are basically two types of teleteach systems. One uses an electronic blackboard; a device which enables the transmission of static pictorial and diagrammatic materials over the telephone lines. With this system the student never sees the instructor but does see everything the instructor writes on the chalk board. Students also have two-way communications with the instructor. This teleteach system is quite different from closed circuit TV (CCTV) because of these two factors: the electronic chalk board, and real time two-way dialogue between student and instructor. This system also uses 35mm slides to augment the electronic chalk board.

The other teleteach system is basically a CCTV system. The students see the instructor but have no two-way communications with that person.

42. Would you participate in MMEP if a substantial portion of the classroom instruction originated elsewhere but was brought to your classroom in real time via audio-visual telecommunications equipment?
- | | |
|----------------------|----|
| a. A definite yes | 48 |
| b. A qualified yes | 67 |
| c. Neutral/undecided | 76 |
| d. A qualified no | 41 |
| e. A definite no | 46 |
43. Would you participate in a MMEP in which closed circuit television was utilized in presenting course material in your classroom?
- | | |
|----------------------|----|
| a. A definite yes | 33 |
| b. A qualified yes | 69 |
| c. Neutral/undecided | 65 |
| d. A qualified no | 53 |
| e. A definite no | 58 |
44. Would you participate in a MMEP in which a substantial portion of the classroom instruction was prerecorded on video cassettes which could be transported to the launch control center?
- | | |
|----------------------|----|
| a. A definite yes | 67 |
| b. A qualified yes | 83 |
| c. Neutral/undecided | 44 |
| d. A qualified no | 32 |
| e. A definite no | 52 |
45. Would you prefer a MMEP in which a substantial portion of the classroom instruction was prerecorded on video cassettes which could be transported to the launch control center to the present MMEP?
- | | |
|----------------------|----|
| a. A definite yes | 53 |
| b. A qualified yes | 57 |
| c. Neutral/undecided | 51 |
| d. A qualified no | 46 |
| e. A definite no | 71 |

46. Would you participate in a MMEP in which a substantial portion of the classroom instruction was conducted by visiting AF and civil service professors from the resident schools at AFIT?

- | | |
|----------------------|----|
| a. A definite yes | 66 |
| b. A qualified yes | 88 |
| c. Neutral/undecided | 69 |
| d. A qualified no | 30 |
| e. A definite no | 25 |

47. Would you prefer a MMEP in which a substantial portion of the classroom instruction was conducted by visiting professors from the resident schools at AFIT?

- | | |
|----------------------|----|
| a. A definite yes | 35 |
| b. A qualified yes | 76 |
| c. Neutral/undecided | 93 |
| d. A qualified no | 39 |
| e. A definite no | 35 |

48. Given the option of (1) teleteach or (2) a closed circuit TV, would you prefer the closed circuit TV?

- | | |
|----------------------|----|
| a. A definite yes | 15 |
| b. A qualified yes | 33 |
| c. Neutral/undecided | 89 |
| d. A qualified no | 62 |
| e. A definite no | 79 |

MMEP graduates and participants continue with Question 49.

All others go to Question 58.

PART II. MMEP Participants and MMEP Graduates Only.

49. Without the MMEP, Missile duty would be a waste of valuable career time.

- | | |
|----------------------|----|
| a. Strongly agree | 44 |
| b. Agree | 44 |
| c. Neutral | 21 |
| d. Disagree | 31 |
| e. Strongly disagree | 17 |

50. The MMEP is one of the most positive aspects of my Missile Crew Duty Assignment.
- a. Strongly agree 67
 - b. Agree 66
 - c. Neutral 16
 - d. Disagree 7
 - e. Strongly disagree 1
51. Would you have volunteered for missile combat crew duty if it had not included the opportunity to earn an advanced degree via the MMEP?
- a. A definite yes 17
 - b. A qualified yes 36
 - c. Neutral/undecided 11
 - d. A qualified no 29
 - e. A definite no 52
 - f. N/A did not volunteer 132
52. If the MMEP was not available to you would you have enrolled in one of the other graduate programs being offered?
- a. A definite yes 74
 - b. A qualified yes 50
 - c. Neutral/undecided 19
 - d. A qualified no 8
 - e. A definite no 6
53. Do you feel that resident directors of the MMEP effectively seek out and solve problems their students encounter?
- a. A definite yes 35
 - b. A qualified yes 56
 - c. Neutral/undecided 34
 - d. A qualified no 23
 - e. A definite no 9
54. If it were not for the cost involved, would you have preferred to be enrolled in one of the locally available off-duty graduate education programs rather than in the MMEP?
- a. A definite yes 13
 - b. A qualified yes 19
 - c. Neutral/undecided 30
 - d. A qualified no 49
 - e. A definite no 46

55. Do you feel that participation in the MMEP improves your duty performance as a MCCM?

a. A definite yes	22
b. A qualified yes	48
c. Neutral/undecided	30
d. A qualified no	35
e. A definite no	22

56. Do you feel that the local AFIT detachment commander makes every effort possible to help resolve any MMEP related problems you encounter?

a. A definite yes	40
b. A qualified yes	37
c. Neutral/undecided	47
d. A qualified no	18
e. A definite no	15

57. Would you have preferred to attend an alternative graduate program offered on base by one of the other schools if your duty schedule had been built around class attendance as it was with MMEP?

a. A definite yes	21
b. A qualified yes	19
c. Neutral/undecided	41
d. A qualified no	36
e. A definite no	40

Proceed on to Question 60.

PART III. (Non-MMEP Participants Only)

For question 58 and 59 please mark your answer on the answer sheet provided and where "other" is indicated, specify your answer in the space provided.

58. What primarily influenced you not to enroll in the Minuteman Education Program, or to drop out after enrollment?

- | | |
|--|----|
| a. Conflict with duty | 6 |
| b. Not interested in the degree offered | 37 |
| c. Had established a date of separation | 0 |
| d. Already had a master's degree | 13 |
| e. Didn't qualify academically | 4 |
| f. Too much time required for needed prerequisites | 40 |
| g. N/A: I am planning to participate in MMEP | 16 |
| h. Other: Specify _____ | 5 |

59. What do you regard as the second most important factor which caused you to decide not to enroll in the MMEP?

- | | |
|---|----|
| a. Conflict with duty | 8 |
| b. Not interested in the degree offered | 33 |
| c. Had an established date of separation | 3 |
| d. Already had a master's degree | 7 |
| e. Didn't qualify academically | 6 |
| f. Too much time required for needed prerequisites | 25 |
| g. I am planning to participate in MMEP | 15 |
| h. Other: Specify _____ | 5 |
| i. None, had it not been for the primary factor identified above, I would have enrolled or remained enrolled in the MMEP. | 20 |

PART IV. (For All Survey Respondents)

Please write your answers in the space provided on this questionnaire. If additional space is required, continue on a separate sheet of paper.

60. Assuming that the following academic programs were available through the Minuteman Education Program, rank the three most desirable, in your order of preference, best first:

1. Data processing
2. Telecommunications
3. Special facilities management
4. Engineering management
5. Logistics management
6. Public relations
7. Electronic engineering
8. Criminology
9. The Present MMEP Curriculum

1. _____
2. _____
3. _____

61. If it was in your power to change the MMEP to better meet your needs and the needs of the Air Force, what would you change?

Your needs:

AF Needs:

62. If there are other forms of course presentation which would encourage you to participate in the present Graduate MMEP, please list them below:

63. Do you have any comments on the merits/detraction of the current MMEP program which you wish to highlight?

Please detach sections three and four of this survey and return them along with the answer sheet to your Wing Project Officer.

Thank you for your cooperation and participation in this survey. These data will be appreciated and will be beneficial in evaluating attitudes toward the present Minuteman Education Program and possible alternatives.

APPENDIX B
MANN-WHITNEY RANK SUM TEST

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10C MANN-WHITNEY RANK SUM TEST PROGRAM WITH
20C CORRECTION FOR TIES
30 DIMENSION OLD(5),NEW(5),RANGE(5),U(5),RANK(5),
40ARANK(5),PRANK(5),TI(5)
50 PRINT,"ENTER THE OLD SAMPLE SIZE"
60 READ,N2
70 PRINT, "ENTER THE NEW SAMPLE SIZE"
80 READ , N1
90 EU=(.5*N2)*(N1+N2+1)
100 N=N1+N2
110 CVR=1.645
120 CVT=-1.96
130 50 PRINT, "ENTER THE OLD VALUES"
140 READ,OLD(1),OLD(2),OLD(3),OLD(4),OLD(5)
150 IF(OLD(1).GE.999) GO TO 200
160 PRINT, "ENTER THE NEW VALUES"
170 READ,NEW(1),NEW(2),NEW(3),NEW(4), NEW(5)
180 ST=0
190 DO 2 I=1,5
200 TI(I)=((OLD(I)+NEW(I))*3-(OLD(I)+NEW(I)))*(1.0/12)
210 ST=ST+TI(I)
220 2 CONTINUE
230 V=N1*N2
240 Q=N*(N-1)
250 X=V/Q
260 YY=((N*3)-N)/12)
270 Y=YY-ST
280 Z=X*Y
290 SD=SQRT(Z)
300 RANGE(0)=0
310 PRANK(0)=0
320 RANK(0)=0
330 DO 10 I=1,5
340 RANGE(I)=OLD(I)+NEW(I)+RANGE(I-1)
350 PRANK(I)=(RANGE(I)+(RANGE(I)+1))/2
360 RANK(I)=PRANK(I)-PRANK(I-1)
370 ARANK(I)=RANK(I)/(OLD(I)+NEW(I))
380 10 CONTINUE
390 SU=0
400 DO 20 I=1,5
410 U(I)=ARANK(I)*OLD(I)
420 SU=SU+U(I)
430 20 CONTINUE
440 ZU=(SU-EU)/SD
450 IF (ZU.GE.0) GO TO 98
460 PRINT," "
470 PRINT,"MOVEMENT IS NOT IN THE DIRECTION PREDICTED"
480 PRINT,"WITH A TWO TAILED TEST AT THE .05 ALPHA LEVEL"
490 IF (ZU.LT.CVT) GO TO 96
500 PRINT,"THE MOVEMENT IS NOT STATISTICALLY SIGNIFICANT"

```



```

510 GO TO 55
520 96 PRINT,"THE MOVEMENT IS STATISTICALLY SIGNIFICANT"
530 GO TO 55
540 98 PRINT," "
550 PRINT,"MOVEMENT IS IN THE PREDICTED DIRECTION"
560 IF (ZU.8T.CVR) GO TO 99
570 PRINT,"MOVEMENT IS NOT STATISTICALLY SIGNIFICANT"
580 PRINT," AT THE .05 ALPHA LEVEL"
590 GO TO 55
600 99 PRINT,"MOVEMENT IS STATISTICALLY SIGNIFICANT "
610 PRINT," AT THE .05 ALPHA LEVEL"
620 55 IF (ZU.6E.0) GO TO 105
630 PRINT 101,CVT
640 GO TO 110
650 105 PRINT 101,CVR
660 110 PRINT 100,ZU
670 GO TO 50
680 200 STOP
690 100 FORMAT (1X,"THE COMPUTED Z VALUE IS      ",
700&F7.3,////)
710 101 FORMAT (/,1X,"THE CRITICAL Z VALUE IS      ",
720&F7.3,/)
730 END

```

ready

*

APPENDIX C
DEMOGRAPHIC COMPARISONS

<u>Demographic Variable</u>	<u>Survey*</u>		
	A&G	E&O	CS
<u>Crew Position</u>			
MCCC	58.3%	52.5%	59.4%
DMCCC	41.7	47.5	40.6
<u>Volunteer Status</u>			
First Choice	54.3	61.1	69.1
Second Choice	7.0	11.7	9.4
Third Choice	7.4	3.8	5.0
Nonvolunteer	31.31	23.4	16.5
<u>Combat Ready Experience</u>			
0 - 6 months	8.3	9.8	6.5
7 - 12 months	20.4	18.9	16.5
13 - 18 months	13.5	10.2	15.1
19 - 24 months	14.3	13.2	14.7
25 - 30 months	12.2	13.6	20.5
31 - 36 months	10.9	14.0	7.6
More than 36 months	20.4	20.4	19.1
<u>A. F. Career Intent</u>			
Definite Yes	52.4	46.8	34.9
Qualified Yes	26.2	31.3	31.3
Undecided	11.4	14.3	21.2
Qualified No	5.7	3.8	5.0
Definite No	5.3	3.8	7.6
<u>Type of Crew</u>			
Standboard	9.6	10.2	13.3
Instructor	13.0	17.4	20.5
Line	77.4	72.5	66.2
<u>Source of Commission</u>			
A. F. Academy	5.2	7.5	10.1
ROTC	54.4	66.0	72.7
OTS	31.3	18.1	5.0
AECP	6.5	6.4	9.7
Other	2.6	11.9	2.5

*A&G is the Ashbaugh and Godfrey survey, E&O is the Engle and O'Neill survey, and CS is the current survey.

<u>Demographic Variable</u>	<u>Survey*</u>		
	A&G	E&O	CS
<u>Regular Commission</u>			
Yes	25.2%	28.7%	28.1%
No	74.4	71.3	71.9
No Response	.4
<u>Grade</u>			
Second Lieutenant	27.4	27.5	27.3
First Lieutenant	24.3	39.2	42.5
Captain	43.5	25.7	26.6
Major	4.8	7.5	3.6
<u>Base</u>			
Grand Forks	13.9	12.5	11.2
Ellsworth	20.4	18.5	19.8
F. E. Warren	14.8	19.2	21.6
Minot	16.5	17.7	14.0
Whiteman	19.6	17.0	18.3
Malmstrom	14.8	15.1	15.1

NOTE: Reference 1:156-157; 5:136-137.

APPENDIX D
CROSSTABS COMPUTER PROGRAM

10NHS,R(SL) 1,8,16;;;,16
 201:IDENT:UP1184,AFIT/LS CAPT KEMP AND CAPT RYBACKI
 301:SELECT:SPSS/SPSS
 311:PRNFL:08,U,S,80A067/HYPBDOUT
 40RUN NAME:QUESTIONNAIRE ANALYSIS FOR NNEP THESIS
 50VARIABLE LIST:VAR001 TO VAR059
 60INPUT FORMAT:FIXED(40X,40A1,/,40X,19A1)
 70N OF CASES; 278
 80INPUT MEDIUM;DISK
 90VAR LABELS;VAR001,PRESNET BASE OF ASSIGNMENT/
 100;VAR002,TYPE OF CREW ASSIGNED/
 110;VAR003,CREW POSITION/
 120;VAR004,MONTHS OF MISSILE COMBAT READY EXPERIENCE/
 130;VAR005,PRESNET ACTIVE DUTY GRADE/
 140;VAR006,SOURCE OF COMMISSION/
 150;VAR007,REGULAR VS RESERVE OFFICER/
 160;VAR008,AERONAUTICAL RATINGS/
 170;VAR009,YEARS OF FEDERAL COMMISSIONED SERVICE/
 180;VAR010,HIGHEST ACADENIC LEVEL/
 190;VAR011,AREA OF UNDERGRAD DEGREE/
 200;VAR012,WERE YOU A VOLUNTEER FOR HCCM/
 210;VAR013,INTENTIONS TO MAKE A.F. A CAREER/
 220;VAR014,PRESNET AFSC BEARING ON CAREER INTENT/
 240;VAR015,PRESNET LOCATION OF ASSIGN ON CAREER INTENT/
 250;VAR016,GRAD OR PRESENTLY ENROLLED IN NNEP/
 260;VAR017,DO YOU LIKE YOUR JOB?/
 265;VAR018,DO YOU FEEL A SENCE OF PERSONAL ACCOMP WITH JOB/
 270;VAR019,DO YOU ENJOY YOUR ACTUAL WORK?/
 280;VAR020,ARE YOU GIVEN ADEQUATE RESPONSIBILITY IN JOB?/
 290;VAR021,ARE YOU SATISFIED WITH YOUR WORK SCHEDULE?/
 300;VAR022,IS PHYSICAL WORKING ENVIR OF LCC SATISFACTORY?/
 310;VAR023,DOES JOB HAVE FAVORABLE EFFECT ON PERSONAL LIFE?/
 320;VAR024,OPPORTUNITY FOR ADVANCEMENT IN MISSILE OP FIELD?/
 330;VAR025,POSSIBILITY OF MASTERS DEGREE MAJOR CONS TO VOL?/
 340;VAR026,NNEP SIGNIFICANT CAREER BENEFIT OF MISSILE DUTY/
 350;VAR027,REDUCTION OF S.I. BILL ENHANCED NNEP/
 360;VAR028,CONT U RESID DIRECTOR PROMOTE NNEP?/
 370;VAR029,NNEP DEGREE ENHANCES PROMOTION OPPORTUNITY/
 380;VAR030,GREATER NEED FOR OFFICERS WITH THE NNEP DEGREE/
 390;VAR031,NNEP DEGREE ENHANCE PERFORM IN FUTURE ASSIGN/
 400;VAR032,NNEP IS ACADENICALLY MORE DIFFICULT/
 410;VAR033,SUPERVISOR ENCOURAGE PARTICIPATION IN NNEP/
 420;VAR034,LOCAL NNEP CNDR PROMOTES ENROLLMENT IN NNEP/
 430;VAR035,NNEP MORE ATTRACTIVE WITH DIFFERENT DEGREE/
 440;VAR036,ARE PREREQUISITE COURSES APPROPRIATE/
 450;VAR037,FAVOR OF CHANGING NNEP CURRICULUM WITH SHORTAGE/
 460;VAR038,PARTICIPATE IN UNDERGRAD PROG IN ENGINEERING/
 470;VAR039,GRAD PROG OFFERED AT BASE MORE RELATED TO ED GOALS/
 480;VAR040,GRAD PROG OFFERED AT BASE MORE RELATED TO PAST ED/
 490;VAR041,PREFER GRAD LEVEL DES WITH NO PREREQ/

500;VAR042,PART IF INST ORIG ELSEWH BROUGHT VIA AUDIO-VIS EQ/
 510;VAR043,PART IF CLOSED CIR TV USED IN PRESENTING MATERIAL/
 520;VAR044,PART IF SUB PORT INST PRERECORDED ON VIDEO CAS/
 530;VAR045,PREFER MNEP INST PRERECORD ON VIDEO CAS TRANS TO LCC/
 540;VAR046,PART IF LG PORT INST CONDUCTED BY VISIT AFIT PROF/
 550;VAR047,PREF IF LG PORT INST CONDUCTED BY VISIT AFIT PROF/
 560;VAR048,PREF CLOSED CIR TV OVER TELETEACH/
 570;VAR049,WITHOUT MNEP MISSILE DUTY WASTE OF TIME/
 580;VAR050,MNEP ONE OF MOST POSITIVE ASPECTS OF MCCH/
 590;VAR051,WOULD YOU VOL FOR MCCH IF NO MNEP/
 600;VAR052,IF MNEP NOT AVAIL WOULD HAVE ENROLLED IN OTHER/
 610;VAR053,RESIDENT DIRECTORS SEEK OUT AND SOLVE PROB/
 620;VAR054,IF NOT FOR COST PREF ENROLL IN OTHER GRAD PROB/
 630;VAR055,MNEP IMPROVES PERF AS MCCH/
 640;VAR056,LOCAL AFIT CHDR MAKES EFFORT TO RESOLVE MNEP PROB/
 650;VAR057,PREF OTHER GRAD PROB IF DUTY SCHEDULE BUILT AROUND/
 660;VAR058,INFLUENCED YOU NOT TO ENROLL IN MNEP/
 670;VAR059,SECOND MOST IMP FACTOR/
 750VALUE LABELS;VAR001 (1) MALMSTROM (2) ELLSWORTH (3) MINOT
 760;(4) WHITENAM (5) F.E. WARREN (6) GRANDFORKS/
 770;VAR002 (1) LINE (2) INSTRUCTOR (3) STANDBOARD/
 780;VAR003 (1)MCCC (2) DMCCC/
 790;VAR004 (1)0-6 MONTHS (2) 7-12 MONTHS (3) 13-18 MONTHS
 800;(4) 19-24 MONTHS (5) 25-30 MONTHS (6) 31-36 MONTHS
 810;(7) B.T. 36 MONTHS/
 820;VAR005 (1) 2LT (2) 1LT (3) CAPT (4) MAJOR (5) LTCOL/
 830;VAR006 (1) AFA (2) ROTC (3) AECP-OTS (4) OTS (5) OTHER/
 840;VAR007 (1) YES (2) NO/
 860;VAR008 (1) PILOT (2) NAVIGATOR (3) NOT RATED/
 870;VAR009 (1) < 1 YR (2) 1 TO 2 YRS (3) 2 TO 4 YRS
 880;(4) 4 TO 8 YRS (5) 8 TO 12 YRS (6) > 12 YRS/
 890;VAR010 (1) BACH DEG (2) BACH DEG WITH SOME GRAD COURSES
 900;(3) MASTERS DEGREE (4) > ONE MASTERS (5) DOCTORATE/
 910;VAR011 (1) ENGINEERING (2) SOCIAL SCIENCES
 920;(3) BUSINESS-MGT (4) MATH (5) PHYSICAL EDUCATION
 930;(6) PHYSICAL SCIENCE (7) EDUCATION (8) ARTS AND LETTERS
 940;(9) AGRICULTURE (10) OTHER/
 950;VAR012 (1) 1ST CHOICE (2) 2ND CHOICE (3) 3RD CHOICE
 960;(4) HAD TO VOLUNTEER TO COME ON ACTIVE DUTY
 970;(5) NO/
 980;VAR017,VAR018,VAR019,VAR020,VAR021,VAR022,VAR023,VAR024
 990;VAR055
 1000;(1) A DEFINITE YES (2) A QUALIFIED YES (3) NEUTRAL
 1010;(4) A QUALIFIED NO (5) A DEFINITE NO/
 1020;VAR014,VAR015,VAR027,VAR028,VAR029,VAR030,VAR031,
 1030;VAR032,VAR037,VAR038,VAR039,VAR040,VAR041,VAR042,
 1031;VAR013,VAR033,VAR034,VAR035,VAR037,VAR036,
 1040;VAR043,VAR044,VAR045,VAR046,VAR047,VAR048
 1050;(1) A DEFINITE YES
 1060;(2) A QUALIFIED YES (3) NEUTRAL-UNDECIDED

1070;(4) A QUALIFIED NO (5) A DEFINITE NO/
 1080;VAR016, (1) YES (2) NO, BUT I PLAN TO PARTICIPATE
 1090;(3) NO, BUT I AM CONSIDERING MNEP PARTICIPATION
 1100;(4) NO, I DO NOT INTEND TO PARTICIPATE/
 1101;VAR025 (1) STRONGLY AGREE (2) AGREE (3) NEUTRAL
 1102;(4) DISAGREE (5) STRONGLY DISAGREE
 1103;(6) DID NOT VOLUNTEER/
 1104;VAR051 (1) A DEFINITE YES (2) A QUALIFIED YES
 1105;(3) NEUTRAL-UNDECIDED (4) A QUALIFIED NO
 1106;(5) A DEFINITE NO (6) DID NOT VOLUNTEER
 1107;(7) NON PARTICIPANT/
 1110;VAR049,VAR050 (1) STRONGLY AGREE (2) AGREE
 1120;(3) NEUTRAL (4) DISAGREE (5) STRONGLY DISAGREE
 1121;(6) NON PARTICIPANT/
 1130;VAR026 (1) YES, SIGNIFICANT BENEFIT
 1131;(2) YES SOME BENEFIT
 1140;(3) NO BENEFIT/
 1171;VAR052,VAR053,VAR054,VAR055,VAR056,VAR057
 1172;(1) A DEFINITE YES (2) A QUALIFIED YES (3) NEUTRAL-
 1173;UNDECIDED (4) A QUALIFIED NO (5) A DEFINITE NO
 1174;(6) NON PARTICIPANT/
 1178;VAR058 (1) CONFLICT WITH DUTY (2) NOT INT IN DEGREE
 1179;(3) EST DATE OF SEPERATION (4) HAD MASTERS
 1180;(5) DID NOT QUALIFY ACADEMICALLY
 1190;(6) TOO MUCH TIME FOR PREREQUISITES
 1200;(7) PLANNING TO PARTICIPATE (8) OTHER
 1201;(9) PARTICIPATING/
 1210;VAR059 (1) CONFLICT WITH DUTY (2) NOT INT IN DEGREE
 1220;(3) EST DATE OF SEPERATION (4) HAD MASTERS
 1230;(5) DID NOT QUALIFY ACADEMICALLY
 1240;(6) TOO MUCH TIME FOR PREREQUISITES
 1250;(7) PLANNING TO PARTICIPATE (8) OTHER
 1260;(9) NONE, HAD IT NOT BEEN FOR THE PRIMARY I WOULD ENROLL
 1261;(10) PARTICIPATING/
 1300RECODE;VAR001 TO VAR059 ('0'=1)('1'=2)('2'=3)('3'=4)('4'=5)
 1310;('5'=6)('6'=7)('7'=8)('8'=9)('9'=10)
 1400*SELECT IF;(VAR001 EQ 1)
 1450FREQUENCIES;GENERAL=VAR012,VAR017
 1500OPTIONS;3,8
 1550STATISTICS;ALL
 1600READ INPUT DATA
 1700CROSSTABS;TABLES=VAR001 TO VAR005 BY VAR017 TO VAR019
 1710STATISTICS;ALL
 1950FINISH
 2000*ENDJOB

ready

*

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